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I.—ON PROBABILITY.

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THE idea of probability has recently been the object of much discussion and controversy among philosophers. One of the chief reasons for this interest in the epistemological function of the probability-concept is the fundamental rôle which probability has come to play in modern science. It is a remarkable fact that, while scientists apply the probability-calculus with great success to, *e.g.*, microphysics, biology and vital statistics, philosophers are still not unanimous as to the right interpretation and "meaning" of probability.

Some of the epistemological controversies about probability are of particular interest, because they show how easily philosophers are misled by certain modes of thought modelled on the pattern of mathematical reasoning. The chief purpose of this paper is to settle one of these controversies by leading our thought out of the mathematical mazes in which it has apparently gone astray.

The development of the definition of probability.

The mathematical treatment of probability originated from the study of possible combinations of results in games of chance. The peculiarities of this object of investigation gave birth to the classical definition of probability as the ratio between the number of possible cases and the total number of (equally) possible cases, and to the general idea of the close connexion between proba-

bilities and possibilities. Let us, therefore, call this definition of probability the possibility-definition.

On the other hand, it is obvious that the importance of the mathematical treatment of probabilities from the very beginning consisted in the fact that there was a close correspondence between the *probabilities* (in the sense of the above definition) of the combinations of results and the *frequencies* with which those combinations occurred in actual games. The Chevalier de Méré's problem gives a good illustration of this.

Later, probability became more directly linked with statistics, as, *e.g.*, when it was applied to the calculation of insurance-rates. This development, however, did not generally lead to the introduction of a new definition of probability, but rather to an extension of the old one to the new fields of application. With these extensions the possibility-definition underwent, in course of time, formal development. The "Spielraum"-theory of von Kries, the "Gültigkeits"-theory of Bolzano, and the definition of probability which is found in Wittgenstein's *Tractatus logico-philosophicus* can all be regarded as further extensions and generalisations of the above-mentioned "classical" definition of probability.

But, with the ever-growing importance of the statistical applications of the probability-calculus, the introduction of an entirely new definition of probability recommended itself to many philosophers and mathematicians as being preferable to an extension of the old one. This new definition interprets probability in terms of statistical frequencies. We shall call it the frequency-definition of probability. It states, roughly speaking, that the probability of an event is measured by the frequency with which that event occurs. The exact formulation of it, however, raises difficulties.

The frequency-definition and "fields of statistical measurement".

If we want to use statistical frequencies for the measurement of probabilities, we need to be clear about the "field" in which the measurement takes place. This "field" can be determined in various ways, giving different values of the probability in question. The probability of an event, therefore, is always relative to a certain "field of measurement". This is largely true also of other definitions of probability.

Suppose we are tossing a coin. The tosses form a series, the members of which possess one of two characteristics, "head" or "tail". Such a series of tosses could be pictured by writing down a row of numbers, one number for each toss, such that for every "head" we write 1 and for every "tail" we write 0.

The series of numbers

(1) 1 1 0 1 0 0 0 1 1

could therefore be the picture of a series of actual tosses with a coin. If it is so, then every sub-series of it is also the picture of a series of actual tosses with the same coin. We shall call series like (1) "*fields of statistical measurement*".

From a purely mathematical point of view there would be no obstacle to the choice of series of the above kind as fields of measurement for probability-values. The probability of an event would then be defined as being equal to the relative frequency with which that event occurs in such a series. *E.g.*, the probability of getting "head", relative to the series written down above, would be $5/9$. It can be demonstrated that the axioms of the "ordinary" probability-calculus are satisfied by an arithmetical model constructed out of such series.

This choice, however, would not be in conformity with the way in which probability actually is measured. For, if we defined the probability of an event as being equal to the relative frequency with which it occurs in a field of statistical measurement, the probability would *vary* with the number of members in the field. If (1) represents a series of nine tosses with a coin, the probability of "head" after nine tosses is $5/9$, after eight tosses it was $\frac{1}{2}$, after seven $3/7$, and so on.

But as a matter of fact the probability of an event is regarded as independent of the number of members in the field of measurement. We want to regard the probability of, *e.g.*, getting "head" in coin-tossing as a quantity which remains *constant* during our throwing with the coin, and which plays the rôle, so to say, of a standard value, round which the actual frequencies group themselves more or less closely. But how is this idea to be reconciled with a statistical interpretation of probability?

A closer examination of the variations which the relative frequencies of, *e.g.*, "head" in a series of coin-tosses undergo as the number of tosses increases, reveals to us an interesting regularity in those variations, namely, a tendency in them to group themselves round a fixed value in such a way that the longer the series is, the smaller on the whole do the deviations from this value become. It is as if the relative frequencies of "head" approached, with increasing number of tosses, this value as an ideal limit.

This fact seems to establish the sought-for connexion between the varying frequencies and the constant probability-value. The probability, we say, is the limit to which the relative frequencies tend when the number of members in the field of statistical measurement approaches infinity.

The frequency-definition and probability-series.

If probability is defined as the limiting-value of a certain frequency, what then is the *field* in which probability is measured? The field itself cannot be one of statistical measurement. For all such fields can be pictured by *definite* rows of numbers, like (1), but the field in which the limiting-frequency is measured presupposes an *indefinite* number of members, and therefore cannot be pictured in this way.

It is important to note this fact, as the "picture" which we want to make of the field in which the limiting-frequency is measured is derived from the above way of picturing fields of statistical measurement. We imagine the field to be something like this:

(2) 1 1 0 1 0 0 0 1 1

where the dots denote that the row of ones and zeros goes on "indefinitely".

The apparent resemblance between the pictures (1) and (2) is, however, very misleading. In fact (2) represents something entirely different from (1), for which reason it would be preferable not to use (2) as a picture at all. The tendency to do so arises from the fact that fields of statistical measurement are *parts* of the field in which a limiting-frequency is measured. The latter is conceived as the result of a continuation *in infinitum* of the process by which the actual fields of statistical measurement are extended through the production of new members in them. The series actually before us is regarded as part of an extrapolated infinite series; and the statement about a limiting-frequency is related to the latter. We shall give the name of "probability-series" to such extrapolated infinite series in which probability is measured.

In order to make clear what a probability-series really is, we have to examine the properties of such a series. It is made up, we know, of an infinite or rather *indefinite* number of members, each one carrying a certain characteristic and therefore being picturable by a number in the same way as was the case within fields of statistical measurement.¹ We know, also, that the relative frequency of each one of these characteristics has a fixed limiting-value in the series.

But these are not the only properties of probability-series which seem relevant in this connexion. We have also to note the way in which the characteristics of the members *alternate*

¹ We shall not here deal with the different possibilities where the number of characteristics or "alternatives" is not finite. The treatment of these cases is not relevant for the ideas which we are here expounding.

in the series. This alternation is marked by a certain "irregularity" or "randomness" in the occurrence of the characteristics. *E.g.*, the infinite series, in respect of which the probability of "head" in coin-tossing is $\frac{1}{2}$, is not made up of "heads" and "tails" succeeding each other so that, say, after every "head" there is a "tail" and conversely. "Heads" and "tails" alternate in a thoroughly random way, which makes it always impossible to determine, from the knowledge of the characteristics of the previous members in the series, whether the next member will be "head" or "tail".

The fields in which probability-values are measured, *i.e.*, the probability-series, may, therefore, be defined as series with an infinite number of members, each one carrying a certain characteristic, such that :

A. The relative frequency with which each characteristic occurs in the series has a fixed limiting-value.

B. The characteristics alternate in a random manner.

Now the further question arises : Is it certain that the two conditions *A* and *B* do not contradict each other ? In other words, do probability-series exist at all ? Or, as the question is often formulated : Has it any "meaning" to speak of limiting-frequencies in series with random distribution of the characteristics ?

The puzzle at the root of these questions is easily detectable. The concept of a limiting-frequency presents no difficulties as regards series which can be constructed according to rules. *E.g.*, in the series of alternating digits which we get by developing the fraction $1/7$ each digit occurs with a definite limiting-frequency. But, when the condition that the series must exhibit "random" or "irregular" distribution of the characteristics is added to the condition that those characteristics must be presented with definite limiting-frequencies within the series, the situation becomes entirely different. The problem now arises of showing that randomness or irregularity can be defined in a way which is reconcilable with the limit-properties of the probability-series.

Is randomness a mathematical property ?

Random distribution is usually defined in some such way as this. Suppose that a certain characteristic occurs with limiting frequency in a certain series, which we will call "the main series". Then this characteristic is said to be distributed in a random way in this series if the following condition is fulfilled, *viz.*, if in every infinite sub-series, chosen from the main series on any principle which does not presuppose knowledge of the characteristics of

the chosen members, the characteristic in question occurs with the same limiting frequency as in the main series. This is the famous "Prinzip vom ausgeschlossenen Spielsystem". We seem to be sure that, *e.g.*, the structure of the series relative to which the probability-values in games of chance, like roulette or dice-throwing, are measured, is in strict conformity with this principle. It does not alter my chances of getting "head" in coin-tossing, whether I pay attention to the series made up of all the throws, or of every second throw only, or of the throws the ordinal number of which are primes, or of throws following after three "tails". The frequency with which "head" occurs is *insensitive* to all such selections.

The dubious point about this definition of randomness concerns the way in which the selection of the sub-series is allowed to take place. The definition allows *all* selections (except, of course, those which pay attention to the characteristics of the chosen members). But, so long as the selections are not specified in any other way, it seems impossible to determine whether randomness and limiting-frequencies are reconcilable properties of probability-series or not.

The course taken by most philosophers in order to answer this question has therefore been to give a mathematical specification of the allowed selections of sub-series, and then to devise a *rule*, according to which probability-series fulfilling the conditions *A* and *B* can be constructed. These constructed series are meant to "picture" random series as they occur in nature, but extended *in infinitum*, or, in the terminology of one recent philosopher, the constructed series ought to *approximate* to such "natural" random series. By giving the rule of construction we show that probability series "exist", *i.e.*, that the properties *A* and *B* do not contradict each other.

A very simple way of specifying the selections of sub-series mathematically is to admit only sub-series made up of members which follow after any assigned combination of characteristics of the preceding members. *E.g.*, a series of all the tosses with a coin which follow after three succeeding "tails" would in this case be an allowed selection. If the limiting-frequencies of the characteristics are unaffected by such selections for *all* possible combinations of the characteristics of the preceding members, the series is said to be "nachwirkungsfrei".

If randomness is defined as "Nachwirkungsfreiheit", then it is possible to construct probability-series, *i.e.*, to give a rule according to which the members of such series with their respective characteristics may be produced.

Such a rule would, for a probability-series with two characteristics 1 and 0, each one having the limiting-frequency $\frac{1}{2}$, tell us how to construct a series where all possible combinations of those two characteristics are followed equally often by 1 as by 0. This construction can be made in the following way.

Take any finite number n_1 . Form the 2^{n_1} different possible combinations of 1's and 0's with which a row of n_1 places could be filled. Construct out of these a row of 1's and 0's such that

(a) when we take n_1 successive numbers in the row in all possible ways, and (if $n_1 > 1$) also the combination which is made up of the last $n_1 - 1$ numbers and the first number in the row, every one of the above 2^{n_1} combinations occurs twice, and nothing else occurs; and

(b) each one of these combinations in the row is succeeded once by 1 and once by 0.

The row constructed in this way we call R_1 . It contains n_2 numbers. Thereupon we form the 2^{n_2-1} different possible combinations of 1's and 0's with which a row of $n_2 - 1$ places could be filled, and use these combinations for the construction of another row R_2 in the same way as the previous 2^{n_1} combinations were used for the construction of R_1 . It is evident from the construction that R_1 will be part of R_2 . We make a cyclical permutation in R_2 , so that it begins with R_1 . R_2 contains n_3 numbers. On the basis of this number n_3 we construct a row R_3 in the same way as R_2 was constructed on the basis of n_2 . This row contains R_2 , and is arranged by cyclical permutation so that it begins with R_2 . This process can be continued *in infinitum*. It gives us a series which is random in the sense of being "nachwirkungsfrei" and contains the characteristics 1 and 0 with a limiting frequency $\frac{1}{2}$.¹

The definition of randomness as "Nachwirkungsfreiheit" comprises only a very narrow type of selections of sub-series. If from a series which is "nachwirkungsfrei" I select, *e.g.*, a sub-series made up only of those members whose ordinal numbers are primes, I get a series where the limiting-frequency of 1 and 0 may have any value between zero and one, depending upon the way in which the series which is "nachwirkungsfrei" has

¹ We illustrate this rule by an example. Take $n_1 = 1$. The $2^1 = 2$ different possible combinations of 1's and 0's are 1 and 0 respectively. R_1 is, according to the rule of construction, 1 1 0 0 or any cyclical permutation of this row. n_2 is 4. 2^{n_2-1} consequently is 8, the eight combinations being 1 1 1, 1 1 0, 1 0 1, 0 1 0, 0 1 1, 0 0 1, 0 0 0. R_2 is, when arranged so that it begins with R_1 , 1 1 0 0 0 0 1 1 1 1 0 1 0 0 1 0. The construction is continued for $n_3 = 16$.

been constructed. But this is a very serious defect in the definition of randomness as "Nachwirkungsfreiheit" for the following reason.

Consider the probability-series in which the probability of getting "head" in tossing with a coin is measured as $\frac{1}{2}$. It is not sufficient for a characterisation of what is meant by randomness in this series to assume *only* that it is "nachwirkungsfrei". For I *know* that I cannot alter the probability of getting "head" by paying attention only to those tosses of which the ordinal numbers are primes. In order, therefore, to characterise the randomness possessed by the series of tosses with a coin, I need a definition which allows also other selections of sub-series than those made according to combinations of the characteristics of the preceding members.

This shows clearly enough that the definition of randomness as "Nachwirkungsfreiheit" is wholly inadequate for the purpose of characterising a probability-field. If we had to use this definition, it would, *e.g.*, be impossible to tell the "meaning" of limiting-frequencies in games of chance.

Much mathematical ingenuity has been used for the invention of series, which, besides being "nachwirkungsfrei", are insensitive also for various other selections of sub-series, and which consequently give an almost ideal picture of what is meant by total randomness. These invented series may be insensitive to all selections made according to "mathematical" principles which practically ever could be thought of. But nevertheless all these inventions have *by their very nature* a serious defect, which condemns this entire way of defining probability-series.

To prove "mathematically" that infinite random series with limiting-frequencies for their characteristics "*exist*" is to devise a rule according to which the characteristic of any member in the series can be calculated, and then to show that the way in which the characteristics are distributed, when calculated from this rule, has certain peculiarities. But as soon as there is such a rule, then it is also possible to select sub-series whose limiting-frequencies differ to any possible extent from the frequencies in the main series. Such a selection could be made, *e.g.*, in the following way, if we again suppose that we are concerned with a series having two characteristics 1 and 0, each with the limiting-frequency $\frac{1}{2}$.

The rule, according to which the random series can be constructed, tells us that the members of the series whose ordinal numbers are N_1, N_2, N_3, \dots , have the characteristic 1, and that the members with the ordinals M_1, M_2, M_3, \dots , have the charac-

teristic 0. (*I.e.*, the rule tells us how the members in the N -series and M -series respectively ought to be calculated.) Now we form a new series, the members of which are selected from the main series so that the first member in the sub-series is that which in the main series has the ordinal number N_1 , the second and third members are those with the ordinal numbers M_m and M_n , which follow next after N_1 in the main series, the fourth is that number in the N -series, say N_r , which comes next to M_n , but is greater than M_n , the fifth and sixth are those M -numbers which follow next in order after N_r and so on *in infinitum*. In this series, which consists entirely of members which occur in the main series, the limiting-frequency of "head" is $1/3$.

Here someone might object that the selection described is so "artificial" that we can be practically sure that nobody ever would hit on the idea of making such a selection.¹ To this two things must be replied. First, that this selection differs from the selection of, *e.g.*, all the members whose ordinal number are primes, *only in degree of complication*, and that we can very well imagine someone making it, *e.g.*, one of those persons who spend their lives trying to discover a "system" for playing with the roulette at Monte Carlo. And, second, that quite irrespective of whether anybody would think of such a selection or not, we are most firmly convinced that any such selection, *if* applied to the series where probabilities actually are measured, would *not* affect the limiting-frequency of any characteristic.

This means that *the randomness characterising probability-series is a property which cannot be mathematically specified so as to make the construction of probability-series possible*. We can construct series where the characteristics are distributed randomly, in the sense that the frequency-limits of the characteristics are insensitive towards certain types of selections of sub-series. But this kind of random distribution is not *that* randomness which we attribute to probability-series, *e.g.*, series of coin-tosses. This latter randomness means insensitivity towards *all* possible selections from the main series, whereas the former kind of randomness means insensitivity towards a mathematically specified class of selection. As soon as this specification is given, so that it makes the construction of random series possible, it excludes some selections.

¹ Another conceivable objection is that the selection presupposes knowledge of the characteristics of the members in the series, and that such selections were once for all excluded. (See above, p. 270.) But this objection does not hold. For the rule from which the N -series and M -series are derived may not be *known* to be the rule of the probability-series itself and not even *supposed* to be so.

Therefore, to sum up, it is only when randomness is specified so as to exclude some selections that random series can be constructed. But the randomness possessed by probability-series is not of this kind. Probability-series, consequently, cannot be constructed. But as the construction of probability-series was required in order to decide whether such series exist, *i.e.*, whether the definition of probability in terms of limiting-frequencies was free from contradiction, it seems as if this question could not be settled. And as long as it remains unsettled the frequency-definition of probability remains problematic.

Historical remarks. The definition of the fields in which probability is measured as random series with limiting-frequencies of the characteristics was introduced in its present form by von Mises (*Wahrscheinlichkeit, Statistik und Wahrheit*, 1 ed., 1928). Von Mises calls the probability-series "Kollektive". That the two properties of the "Kollektive" *A* and *B* above are perhaps contradictory, when randomness is formulated as insensitivity towards *all* selections, was emphasised by Kamke (*Einführung in die Wahrscheinlichkeitstheorie*, 1932). Since then the problem of constructing probability-series has occupied a central place in discussions about probability. Popper has specified randomness mathematically as "Nachwirkungsfreiheit" (*Logik der Forschung*, 1935). Reichenbach's "normale Folgen" are random in a slightly more comprehensive sense (*Wahrscheinlichkeitslehre*, 1935). Lately Copeland and Wald have constructed series which are insensitive towards "almost all" selections according to mathematical principles. (See, *e.g.*, Copeland's paper, "Point Set Theory applied to the Random Selection of the Digits of an Admissible Number" in *American Journal of Mathematics*, 1936.) Von Mises himself has disapproved of all these attempts to construct probability-series or "Kollektive" and raised acute objections against those constructions, but seems on the other hand never to have become aware of the urgent nature of the problem about the reconcilability of randomness and limiting-frequencies (*Wahrscheinlichkeit, Statistik und Wahrheit*, 2 ed., 1936.)

Randomness and limiting-frequencies as properties of "empirical" series.

We are tossing a coin. The tosses are given an ordinal number as they occur, the first, the second, . . . , the *n*th. The actual tosses, beginning with the first and ending with the *n*th, form a field of statistical measurement. When we make more tosses, we get a larger field, which begins with the previous one. We say that the first field was extended into the second. This extension can always be continued, so that for every finite number *m* we can always construct a field with *m* members or with any given finite amount more than *m* members. This "construction" is not made according to a mathematical rule, but "empirically" by tossing the coin.

The series of tosses is called *potentially infinite*, as it can be

made to contain more members than *any* given finite amount m . It is further called *extensional* in respect of the characteristics "head" and "tail", as the characteristics of its members are determined "empirically" and not according to mathematical calculation.

It is now a most important fact that we can define what is meant by the limiting-frequency of a characteristic in a potentially infinite, extensional series in *the same way* as we define a limiting-frequency in an infinite series where the characteristics of the respective members are calculated according to a rule (intensional series). In other words, the same definition of a limiting-frequency which is known from the treatment of mathematical series is applicable also to potentially infinite extensional series.

This is seen from an examination of the usual definition of a limiting-frequency. A characteristic C is said to possess a limiting-frequency p in a series S , if the following condition is fulfilled :

$$(3) \quad (E!p)(\delta)(x_m)(\exists x_n) [n > m : N \binom{i=n}{i=1} (Cx_i \& Sx_i) / N \binom{i=n}{i=1} (Sx_i) = p \pm \delta]$$

i.e., if there exists one and only one value p (between 0 and 1, including these two limits) such that for every quantity, however small, and for every x_m , there is a later member in the series, x_n , at which the relative frequency of the characteristic C falls within the interval $p \pm \delta$. Or in a less exact, but more handy, formulation: The limiting-frequency of the characteristic C in the series S is p , if it over and over again happens that the actual relative frequency of C becomes p , and there is no other number than p for which this is true of the relative frequency of C . The only thing that is required of the series S , in order that this definition might be applicable, is that the members of S are *enumerable*. As this is the case with infinite extensional series, as *e.g.*, the above characterised series of tosses with a coin, the definition of a limiting-frequency is applicable to such series.

Now we make the following suggestion: The probability of an event might be defined as the limiting-frequency of that event within an extensional infinite series. We have already seen that such a definition is possible, *i.e.*, that it does not contain a contradiction. But what becomes then of the randomness which also ought to be a property of probability-series?

Randomness was defined as insensitivity of the limiting-frequencies of the respective characteristics towards selections of sub-series. If a sub-series is selected from an infinite

extensional series, the sub-series is also extensional in respect of the characteristics in question. Now a proposition about a limiting-frequency in an extensional series remains *always* an hypothesis about what is going to happen in the series. The statement that the limit in the main series is such and such is an hypothesis, so too are the statements about the limits in the sub-series, and so consequently are the statements that the latter values differ or do not differ from the former ones.¹

Although statements about limiting-frequencies in extensional series always remain hypotheses, their adoption by us is suggested by certain experiential facts. *E.g.*, in the case of coin-tossing this experiential fact is that the relative frequency of "head" usually as a matter of fact approaches $\frac{1}{2}$ as the number of tosses increases.

Now suppose that in a series of coin-tosses, sufficiently long, we should find that if we selected a sub-series, consisting of all the tosses with the property *P*, the frequency of "head" tended, say, to $\frac{1}{3}$, how should we react to this? Two ways are possible. First of all the fact that "head" has occurred more frequently in the sub-series in question than in the series as a whole may simply be a strange chance-event. It may very well be that, if we continue the series, "head" and "tail" will "in the long run" occur equally often also in the series of tosses with the property *P*, in which case the series after all is random as to *P*. This possibility can never be excluded.

But if "head" continued to show a tendency to occur more frequently in the *P*-series than in the series as a whole, we might cease to speak of the series as being random and say that we have discovered a law for the distribution of "head" and "tail". This law would allow us to split the original probability-field into two new fields, one consisting of all the tosses with the coin which are *P*, the other of all the remaining tosses. Henceforth in calculating the probability of getting "head" with the coin

¹ The fact that propositions about limits in empirical series are neither verifiable nor falsifiable has startled several philosophers (Reichenbach, Hempel, Popper). Certain supporters of the doctrine that only verifiable propositions are "meaningful" have regarded it as a serious objection against the frequency-definition as such. The dispute, however, about "meaningfulness" or "meaninglessness" of propositions about limiting-frequencies is as regards their "*Entscheidbarkeit*" wholly irrelevant for our considerations above. The choice of an "*Abgrenzungskriterium*" of propositions which are admitted as meaningful in the empirical language is a matter of convention, and this convention may be laid down so as to include propositions like (3) or not. This has nothing to do with the question whether it is possible to speak about limiting-frequencies in extensional series in a way that is free from inner contradictions.

we have to consider to which one of the two series the toss in question belongs. These new series themselves are regarded as random so long as we do not know of any further "Spielsystem", by means of which one can better one's chances of getting "head". If such a "Spielsystem" were discovered later on, we should again split the series into new series. This process of splitting up the probability-series is continued, so that the series in use are always random series.

Randomness in the probability-series, it could therefore be said, is a consequence of the way in which we *use* such series. This is in no way strange if we consider why we make probability-statements at all. When I ask, *e.g.*, for the probability of getting "head" in coin-tossing, I am asking for certain information about the way in which "head" occurs. This information I wish to make as "accurate" as possible, *i.e.*, it ought to tell me the most successful way of foreseeing the truth. If several persons were playing with the coin in the above example, that person would be most successful who pays attention to most ways of altering the chances by selecting sub-series. This means that as soon as we detect that a series is not random, we get information about the event in question, which helps us to foresee the truth in a better way than the previously possessed information did, and which therefore is immediately used for splitting up the probability-series into new series. In other words: as soon as a series is shown to be not-random, it is discarded as a probability-series.

Randomness marks the limit of our knowledge about the way in which an event takes place. When we do not know anything more about the way in which an event occurs in a series than that it has such and such a limiting-frequency, we say that the event is distributed randomly in the series and that the limiting-frequency is its probability. That a characteristic is distributed randomly *means* that we do not know any law for its distribution. Of course, we *may* detect a law for the distribution, but we *may* also never do so, we simply do *not* know. This lack of knowledge is expressed in our talk about randomness.

To this way of dealing with randomness a very interesting objection might be suggested. The above-mentioned splitting up of the probability-series, it might be said, actually never takes place on "mathematical" grounds. If it takes place at all it is on "physical" ones. *I.e.*, the property *P* used for the definition of the new probability-series is always some "physical" property. We can, of course, never be absolutely certain about whether a series is random in respect of such "physical" selections

or not. But we are absolutely certain that no selection made from a probability-series on purely mathematical principles will ever affect the limiting-frequencies. This kind of randomness in the probability-series is a bit of "positive" information about the structure of those series, and not simply a consequence of the way in which they are used. And also it was obviously *this* kind of randomness, and only *this*, with which we were concerned in the previously mentioned attempts to construct probability-series.

Suppose that it really were the case, that we are *absolutely sure* that it is not possible to affect the limits in a probability-series by selections according to mathematical principles.¹ And suppose further that somebody in tossing with a coin finds that in the sub-series made up of all tosses which follow after two successive "tails" the frequency of "head" tends to be considerably greater than in the series of all the tosses. How is this to be accounted for? There seem to be three possibilities.

1. We may detect by further investigation that some "physical" property *P*, not taken into account when the selection was made, is the "cause" of the increased occurrence of "head" in the sub-series, *i.e.*, that it is plausible to assume that the presence of *P* in the selected tosses facilitates the occurrence of "head".

2. We do not detect any such property *P* to which we might attribute the increased frequency of "head" in the sub-series, but the tendency of "head" to occur more frequently in the selected series than in the series as a whole may be so marked, that we are forced to say that there *must* be some such property, although as yet unknown.

3. We do not detect any property *P* and do not find it plausible to postulate the existence of any unknown property facilitating the occurrence of "head" in the sub-series in question. Then we say that the "abnormal" frequency of "head" is *due to chance*.

In the cases 1 and 2 we have "saved" the randomness of the probability-series with regard to mathematical selections, by showing that the mathematical selection happened to be at the same time a "physical" selection, *i.e.* that there was a "cause" for the altered frequency. And in the case 3 the randomness followed from what is meant by saying that the event was *due to chance* as opposed to "cause". Thus the fact that a pro-

¹ The question whether we really *are* sure about this or not is irrelevant. For, if we are so, then the following reasoning applies, and if we are *not*, then the suggested objection against our treatment of randomness vanishes.

bability-series is random, in the sense of being insensitive towards all selections according to mathematical rules, is a consequence of the way in which we characterised what it means to say that something is due to "chance", and what it means to say that it is due to a "cause".

Randomness, therefore, may be said to mean *two* different things. First, "mathematical randomness", *i.e.* insensitivity towards selections according to mathematical rules. This is a tautological property of probability-series, as it is simply the consequence of what we *mean* by "chance" as opposed to "cause". And, second, "physical randomness", which expresses our lack of knowledge of further "causes" affecting the distribution of the characteristics. This property of the probability-series, again, is a consequence of the *use* we make of these series in our search for maximum information about the way in which an event takes place.

It would, however, on several grounds be preferable not to speak of the former kind of "randomness" as being randomness at all, but to take random distribution to mean exclusively "physical randomness". The reasons why the "insensitivity" of the limiting-frequencies towards mathematical selections is also called *randomness* are extremely interesting, as they give the clue to the whole idea of the mathematical construction of random series, but we shall not touch upon the subject in this connexion.

We can, at any rate, conclude that with this clarification of the puzzle of randomness the question about the reconcilability of *limes*-properties and random distribution, *i.e.* about the "existence" of probability-series, entirely vanishes. Probability-series are infinite extensional series with limiting-frequencies for their characteristics, and that such series "exist", *i.e.* that it is not contradictory to attribute limiting-frequencies to such series, has already been proved. The randomness of those series again is a property of the way in which the series are *used* (and if we also pay attention to "mathematical randomness", a consequence of the way in which the borderline between "chance" and "cause" may be *defined*). That extensional random series "exist" means simply that *as a matter of fact* extensional series are *used* (and "chance" as opposed to "cause" *defined*) in a certain way. Thus the "existence" of randomness and the "existence" of empirical series with *limes*-properties mean two different things, and it makes no sense to ask whether the existence of the one contradicts or does not contradict the existence of the other.

The frequency-definition and the "meaning" of probability.

With the above considerations we tried to show that it is logically possible to define the probability of an event as the limiting-frequency of that event in a certain field of measurement, the probability-series. The frequency-definition, in other words, is a possible definition of probability. We shall conclude with some very brief remarks about the relation between this definition and some other ways of defining probability.

According to a well-known definition, the probability of an event is *the degree of rational belief* which we ought to have in expecting the occurrence of that event. Now we ask: If the degree of rational belief in the event E is p , does it then follow that there exists a probability-series where E occurs with the limiting-frequency p ?

This question certain supporters of the degree-of-belief-definition of probability seem to answer negatively, for reasons which in their opinion are also objections against the frequency-definition. Even if the evidence, they would say, were capable of statistical measurement, it is conceivable that the limiting-frequency of the event should differ from p . For the statistical frequency is only a "mean value" which tells us something about the event's occurrence on a great number of occasions, whereas the single case in which we are expecting the event exhibits a number of specific circumstances which influence our belief in the event. Therefore, even if we knew that the event "in the long run" is going to occur in such and such a proportion of all the cases, it might still be rational to expect the event in *this* case with a degree of belief, higher or lower than the frequency-value, depending upon the peculiar circumstances.

This remark certainly is important. We shall answer it with the following counter-remark.

Suppose that there is some evidence in the present case which makes a belief of degree q in the event E *rational*, although we know that the limiting-frequency of that event in a certain probability-field is p ($q \neq p$). The property of that event, which makes it a member of the probability-series in question, we call H , and the additional evidence, which makes a degree of belief in the event different from p *rational* in this special case, we call H' . Suppose there were a probability-series, the defining property of which was H & H' , i.e., the members of which possessed *per definitionem* the properties H and H' . In this series the limiting-frequency of E must be q . Because if it were not q , but, say, r , it would mean, e.g., in the case of a bet, that it would be more "profitable" to bet as if the probability of the

event were r , but nevertheless more *rational* to believe that it was q . But what then justifies us in calling the belief "rational" at all? Does it make any sense to call a belief "rational", if it is known that acting upon that belief would be less successful, less advisable, than acting upon a different belief? Is not the *rational* belief in an event *that* belief in it which is the best guide to the truth, and is not the reason why H' gives to the *rational* degree of belief in E a value differing from p , the fact that H & H' is a better guide to the truth than simply the property H ? But if these questions, as seems obvious, are answered affirmatively, then the statement that the rational degree of belief in an event is, say, p implies the other statement that the limiting-frequency of the event in question in a certain probability-series is p . This probability-field, we might also say, *defines* the *rationality* of the belief in the event.

To this, again, it may be answered that the circumstances which in any single case determine the rational degree of belief in an event are so peculiar that they cannot easily be reproduced, and for this reason the corresponding probability-series cannot exist. In constructing the series with limiting-frequencies we have to be content with more general properties, which may be useful for several kinds of measurements and calculations, but which make the limiting-frequencies insufficient for the exhaustive definition of what is meant by the probability of a single event. If this is to be an objection against what we said above about the correspondence between limiting-frequencies and rational degrees of belief, it rests on a misunderstanding. We do not deny that the obtainable series, where limiting-frequencies are measured, are often too general in their structure, too "crude", so to say, to do justice to what is meant by probability in singular cases. All we say is that, if there are special circumstances which make the rational degree of belief in an event (q) to differ from the limiting-frequency of the event in such series (p), it is because if there were a probability-series, defined by those special circumstances, then the limiting-frequency of the event in question in this series would be that value q . And this hypothetical statement is just what makes the degree of belief q in the event under those special circumstances *rational*.

Analogous considerations could also be applied to the above-mentioned possibility-definition of probability. In the degree-of-belief-definition the connexion with frequency-statements was brought in with the qualification that the degrees of belief ought to be *rational*. In the possibility-definition the corresponding connexion enters with the "quantification" of the possibilities.

The definition requires that we should know when two possibilities are "equal". This equality may be determined on various grounds, *e.g.*, by considerations about symmetry, as is the case in certain games of chance, and it is not necessary that actual knowledge of statistical frequencies should occur among these grounds. But suppose that, with regard to two characteristics, it is said that the occurrence of each of them under certain circumstances is equally possible. Then if we formed a probability-series, the members of which possessed those peculiarities which made us say that the two characteristics above were equally possible, the limiting-frequencies of the two characteristics in the series must be the same. For, suppose there existed a probability-field, defined in this way, in which the characteristics in question had different limiting-frequencies. What sense would it then make to say that it is *equally* possible that at any place in the series the one characteristic may occur or that the other may do so, if we at the same time know that one of the characteristics occurs more frequently in randomly chosen places in the series than does the other?

With these brief remarks it has not been our intention to bring about any decision as to how probability "ought" to be defined. The whole question about *the* definition and *the* meaning of probability seems to us futile. We have rather wanted to show that the three mentioned ways of defining probability all have something to do with each other, that they are interconnected, and, so to speak, "check each other up". The nature of this interconnexion, however, cannot be exhaustively grasped in general considerations such as those above, but is a matter for detailed investigation in particular instances.

But the primary purpose of this paper has been to show that one of these "definitions" of probability, *viz.*, the one in terms of limiting-frequencies, is free from those inner logical difficulties, from which, in the opinion of several philosophers, it has suffered. Our task has been to clarify the two ideas of limiting-frequencies and random distribution in "empirical" series. This clarification has seemed especially "urgent", because the treatment of these two ideas, as far as our knowledge goes, has taken a totally misleading course with the majority of recent thinkers. We have had to deal with one of those mathematical mazes in which present philosophy shows such a predilection for going astray. Misled by the mathematical use of concepts like "limit", "series", and "selection", philosophers have sought to solve a problem on a plane where the problem cannot be reached at all. It has indeed been seen that the proposed "solutions" of the

problem have been unsatisfactory, but the reaction to this has been to go further and further in the same direction, instead of making a complete turn round out of the maze. But, once we have been able to make this turn, the solution of the problem becomes simple, trivial, and, perhaps, almost "shocking" for those who expected it to lie in ingenious and complicated mathematical constructions.

II.—THE ETHICAL AND SOCIAL THOUGHT OF PROTAGORAS.

BY ADOLFO LEVI.

WHEN one deals with the philosophy of the Sophists, there are things which, though well known, must be briefly recalled, as they form the necessary antecedent of what one is going to say subsequently. When that current of thought was developing, Athens was the real cultural centre of Greece. However, it cannot be said that the study of natural philosophy and of other subjects connected with it (*e.g.* mathematics) were attracting there any special attention, though they were no longer neglected, since Anaxagoras, both as a teacher and as a writer, had aroused with regard to them the interest of cultivated minds, *e.g.* of Pericles. The Athenians, and in particular the young men of the upper classes, who, owing to their position and family traditions, desired to be prominent in public life and to fill posts of importance, felt that, in a democratic State in which the *demos* reigned supreme, it was necessary for them to possess those accomplishments and that knowledge which would help them to convince political assemblies and obtain their favour to defeat their adversaries, to defend themselves and accuse others before tribunals, and thus to acquire power. In other words, interest was directed now to rhetoric, both political and forensic, and to the knowledge, indispensable in civic leaders, of the policy, legislation, constitution and action of the State. Now the man who wants to be a leader in his city can command attention and support only if he creates in his hearers the conviction that his activity is directed towards the achievement of common welfare, and not to the acquisition of personal power. It was inevitable that, owing to the prevailing selfishness and eager pursuit of wealth and power which were at the root of the evils that were to afflict Greece during the Peloponnesian war, many aspiring men should be exclusively led by personal, or even immoral motives, though they had to pretend the contrary. In any case, as a matter of principle if not of fact, the preparation of a statesman implied, as its foundation, a sound ethical and social education, capable of forming the good man and the good citizen: two types that, according to convictions

still ruling the common conscience of the Greek people, could not be thought of as distinct, and even less as opposed. What has been said of Athens might be repeated, in general, for the other Greek cities that had a democratic government, in which the same wants and the same exigencies existed. Now, these wants and exigencies could not be satisfied by the traditional methods of education and instruction. In Athens, indeed, and in Greece generally, schools confined their activities within very narrow limits: those kept by grammatists and citharists taught reading, writing, arithmetic and, on a very small scale, literature and music; those kept by pedotribes looked after the physical training of their pupils. The moral and social preparation of boys was entrusted chiefly to their families during the periods of infancy and boyhood, and subsequently to the precepts and example of the wisest elders, and above all to the commandments of the law, of the νόμος.¹ In order to meet the requirements of a παιδεία² wider and fuller than the traditional one, the sophists began to hold courses of lectures either in public or in private, for which generally they received fees. The sophists, as we shall see also in the sequel, professed to educate (παιδεύειν) men, to be teachers of ἀρετή; and we must now see what conception they had of their office. Did their education aim at making their pupils successful in public and private life, or did it, also and above all, tend to give men and citizens a moral and social preparation? In other words, did they interpret ἀρετή merely as capacity and practical ability, or principally as virtue in the ethical sense of the word? Besides, what relations did they establish between the teaching of ἀρετή and of the other subjects they taught? These questions can be answered only by studying in detail the works of the various sophists, and in particular of Protagoras,³ whose figure rises above those of his brethren, and who exercised a more powerful influence on the thought of later generations with his famous saying about man as a measure of all things. Even in antiquity this statement

¹ For these points see any history of education in Greece. Sufficient information on the subject is offered by a passage of *Protagoras* (325c-326e) which will be expounded later on.

² In what follows this word will be rendered by "education," as it implies spiritual formation or culture in the widest sense of the term.

³ For the writings and life of Protagoras see E. Zeller, *Die Philosophie der Griechen*, I, 2^o (Leipzig, 1920), pp. 1296-1304 and notes. For bibliography see Überweg-Praechter, *Die Philosophie des Altertums* (= Überweg, *Grundriss der Geschichte der Philosophie*, I¹² [Berlin, 1920], pp. 52*-53e*); W. Nestle, in his edition of the *Protagoras* (Platon, *Ausgew. Schriften*; IV, *Protagoras*,⁷ Leipzig and Berlin, 1921, pp. 65-68). Pp. 14-32 speak also of the works of the sophist.

attracted the attention of philosophers and, since then, it has never ceased to provoke discussion, denial, or defence, so that we may say that in common opinion Protagoras is exclusively the man who opened the way for relativism and subjectivism. For this reason, scholars, when speaking of him, start from the *Theaetetus*, which in the first part presents and discusses the Protagorean dictum : they either neglect another dialogue that bears his name and in which he appears as the principal interlocutor with Socrates, or, recognising that he is credited in it with statements seemingly inconsistent with those contained in the *Theaetetus*, try to get rid of the disagreement by showing that the doctrines of the *Protagoras* can be reconciled with the famous dictum. In any case, however, the man-measure principle is taken as the starting point for the interpretation of the sophist's thought. Now, this procedure, which may seem quite natural, appears instead questionable when we consider that the *Protagoras* presents the sophist as still living in the full exercise of his activity, while the *Theaetetus* speaks of him as of a dead man, and, after having recalled and discussed his saying, conjures his shadow from Hades, in order that he may defend it from the criticisms levelled against it. If one does not wish to discredit the whole of Plato's evidence, one must acknowledge the fundamental importance of the *Protagoras* (in which the principle discussed in the *Theaetetus* is not even mentioned), and through it try to reconstruct the thought of the sophist, interpreting, along the lines thus laid down, the evidence offered by the other dialogue.

As is well known, in the *Protagoras* the conversation between Socrates and the sophist is carried on in Callias' house : besides the latter, Alcibiades, Critias, Hippias and Prodicus also take part in it. Other persons, and among them Paralus and Xanthippus, two sons of Pericles, are present, but do not speak.

Protagoras affirms that the art of the sophists is ancient ; but that those who practised it in former times, in order to escape discredit, hid it under the veil of poetry, like Homer, Hesiod and Simonides, or of prophecy, like Orpheus and Musaeus, or of gymnastics, like Iccus of Tarentum, or of music, like Agathocles of Athens, Pythocles of Keos—and many others. In his opinion, they were mistaken, and not only did they fail in their purpose of not being recognised for what they were, but they brought upon themselves even greater discredit. Protagoras, instead, owns that he is a sophist and that he can educate men (*παιδεύειν ἀνθρώπους*) and thinks that this straightforward acknowledgment is the best defence against the opposition of

others; indeed, although he has practised his art for many years, he has suffered no harm (316d-317c; cf. 348e-349a). These words throw light on the activity of sophists in general and of Protagoras in particular. His declarations show that the education of which he speaks had utilitarian ends, it is true, but that, also and above all, it had moral and social purposes in view. At the start he affirms that if young Hippocrates will place himself under his tuition, he will not be obliged, as with other sophists, to study arithmetic, astronomy, geometry, and music¹ (as he said those words, he kept his eye on Hippias whose teaching was encyclopædic and included mathematics and the natural sciences). Under Protagoras the young man will study only what brings him to his school: he teaches "prudence (εὐβουλία) in private business, how one may best manage one's domestic concerns, and, as regards civic affairs, he teaches how to excel in speech and action" (318e-319a). But it is not merely a question of the prudence and ability that bring power and success, because, as Socrates at once comments on the sophist's statements with the latter's positive concurrence, he is speaking of the political art and undertakes to change men into good citizens (Δοκεῖς γάρ μοι λέγειν τὴν πολιτικὴν τέχνην καὶ ὑποσχεῖσθαι ποιεῖν ἀνδρας ἀγαθοὺς πολίτας: 319a). According to the convictions ruling the Greek conscience at that time, a good man is necessarily also a good citizen, so that the teaching of Protagoras aims above all at forming both, though he does not neglect to teach also the prudence necessary for the good manage-

¹ A statement by Aristotle (*Met.* B, 2, 997b, 32-998a, 4. In H. Diels-W. Kranz, *Die Fragmente der Vorsokratiker*⁵ [Berlin, 1935. Quoted as Diels-Kranz], 80 (= H. Diels, *Die Fragmente*⁴ [Berlin, 1922. Quoted as Diels], 74), B, 7) shows that Protagoras had criticised geometers, maintaining that the tangent does not touch the circumference at one point only. This means, according to the interpretation of W. Nestle in his edition of the *Protagoras*, that the sophist denied the objectivity of mathematics. This criticism was probably connected with that of the science of nature. From the Platonic text above mentioned we can infer that the sophist meant in this way to justify the restriction of his teaching to the studies concerning practical life and rhetoric, demonstrating that mathematics cannot master the structure of the natural world, and is therefore a subjective construction. It is doubtful whether the criticisms on mathematics belonged to a work *Περὶ τῶν μαθημάτων* mentioned by Diogenes Laertius, IX, 55 (Diels-Kranz, 80 [= Diels, 74] A, 1), the title of which, however, is a matter of uncertainty. The last remark applies also to the *Περὶ πάλης* mentioned by the same source (Diog. Laer., *ibid.*, in Diels-Kranz and in Diels, *ibid.*); the title probably comes from a passage of the Platonic *Sophist* (pp. 232d-233a, in Diels-Kranz and in Diels, *ibid.*, B, 8), which, however, suggests a criticism of the *τέχναι*, with a view to exalt the importance of rhetoric.

ment of domestic concerns as well as the accomplishments that give success in political life. Prudential and utilitarian ends are thus connected with ethical and social purposes, but it is clear that the latter are particularly stressed and the others are to be subordinate to them.¹ The means that Protagoras uses are the studies which concern practical, ethical and social life, and those which train in public speaking and teach how to convince listeners; in other words, rhetoric, taken in a wide sense. From what Protagoras says in the sequel ("I think . . . that to be well versed in poetry plays a great part in the education of a man" [*περὶ ἐπῶν δευρὸν εἶναι*]: 338e) it is evident that the study of poets had a considerable place in the sophist's teaching, as it served both as an instrument for ethical and social formation, and as material for training. Rhetoric, that is to say, the art of speaking convincingly, requires an adequate technical preparation. Ancient sources give us information about the means that Protagoras used in order to attain his objects. It is not necessary to speak of this here: we must, instead, follow the debate in the Platonic dialogue concerning the profession that Protagoras declared he practised. Hitherto Socrates has thought that political *areté* (or, as he calls it afterwards, the virtue of the man and of the citizen) is not teachable for two reasons.² With the other Greeks he thinks that the Athenians are wise. Now, they behave as if they thought quite differently from Protagoras. Indeed, if in public assemblies they must decide about buildings they consult architects, if about ships they consult naval engineers; in a word, in all things that can be taught and learned they turn to experts, and the man who, not being one, were to offer his opinion on these subjects would be laughed at and reduced to silence. But when the people must deliberate about the general affairs of the city (that is, as Taylor³ understands it, about the ethical value of a public decision), then all without exception, rich and poor, the noblemen as well as the vulgar,

¹ A text of the *Republic* (X, 600c-d) which describes in the same way as the *Protagoras* the teaching of the sophists, must be interpreted in the above-mentioned way.

² At the presumed date of the dialogue (probably about the end of the Periclean age) the teachability of virtue must have been in Athens an habitual subject of discussion. This is proved by the evidence of many contemporary writers, to be found in M. Pohlenz, *Aus Platos Werdezeit*, Berlin, 1913, pp. 85 and foll., and in P. Friedländer, *Platon*, II, Leipzig-Berlin, 1930, p. 8. For our purpose we need not deal with the exact meaning of the arguments of Socrates against the teachability of virtue, in so far as they concern the interpretation of Plato's thought and his own.

³ *Plato*,³ London, 1929, p. 242.

may rise to speak without any one accusing them of incompetence. It is clear therefore that the Athenians do not believe that political virtue is teachable. And this is supported by another argument. Even in private life the wisest and best of citizens do not communicate to others the virtue they possess: thus Pericles has not transfused his own knowledge into his children, nor (while he caused them to be diligently instructed in everything a master is able to teach) has he urged them to learn it from others, but has let them wander at random, hoping they could discover virtue by themselves. Considering these facts, Socrates does not think that virtue is teachable; but when he hears Protagoras affirm the contrary, he feels shaken in his belief, and thinks that Protagoras, owing to his long experience and study of the subject, must have something serious to impart; and therefore begs him, if he can, to give a clearer demonstration of his statement (319a-320c).

The sophist declares himself ready to give the required explanation by means of a myth.¹ When the different species of mortal beings came into existence, the gods ordered Prometheus and Epimetheus to distribute among them in a suitable manner the powers (*δυνάμεις*) which had been allotted to them. Epimetheus obtained leave from his brother to effect the distribution, which Prometheus would subsequently check; but, doing it carelessly, he exhausted among other animals the supply of gifts at his disposal; so that nothing was left for man, who remained naked and unable to cover and defend himself. Then Prometheus stole from the gods fire and technical knowledge (*ἐντεχνος σοφία*),

¹ It is generally admitted that the myth related by Protagoras (in Diels-Kranz, 80 [= Diels, 74] C, 1) is a re-elaboration or an imitation of a theory on the formation of human civilisation given by the sophist in his *Περὶ τῆς ἐν ἀρχῇ καταστάσεως* ("On the Primitive Condition [of Mankind]"). As the myth is an interpretation and a development of the *logos*, the thoughts contained in the former must also be considered as Protagorean, unless one holds that the Sophist had expressed them only in a *logos*, and that the mythical form belongs to Plato (cf. W. Nestle, *Intr. to the Protagoras*, p. 22). K. Reinhardt has shown (*Hekataios von Abdera und Demokrit: "Hermes"*, 47 [1912], pp. 492-513) that the theory on the history of civilisation which is presented by Diodorus Siculus at the beginning of his work (I, 7 foll.) can be traced back to Democritus, through Hecataeus of Abdera, Epicurus and another writer, who have been used by Johannes Catrarios and Johannes Eretzes (Principal texts in Diels-Kranz, 68B, 5 [= Diels, *Nachträge zum Zweiten Band*, pp. xi-xiv]). As Democritus's and Protagoras's theories coincide, it is evident that the former must have borrowed it from the latter; otherwise we should have to accept the suggestion, strange and unjustifiable in the extreme, that Plato presented through a sophist a conception which actually belonged to an atomist.

that is the knowledge of industrial arts, and bestowed them on man, who was thus helped to bear the burden of life. As man partook of the divine condition (that is to say, of the gift of fire), he was the only one among animals that acknowledged the gods, built images and altars,¹ discovered the arts of articulating words, and invented dwellings, dresses, a covering for his feet and other parts of the body, and the different kinds of food to be obtained from the earth. At the beginning men lived in isolation, and had no cities; and, as they were weaker than the other animals, and the industrial arts were insufficient to defend them, they were destroyed by wild beasts. They sought safety in the foundation of towns, but, being ignorant of the political art (*πολιτικὴ τέχνη*), they injured one another and separated again. Zeus, to prevent the destruction of mankind, commanded Hermes to bestow on all men *αἰδώς* (modesty, in the sense of moral awe) and *δίκη* (the sense of justice), as ornaments of cities and bonds of amity; and strictly enjoined him to distribute those gifts, not to some only, but to all men indiscriminately, "because cities could not exist if, as in the case of other arts, few men only were partakers of them". Zeus directed Hermes to establish this law in his name "that one who cannot feel awe and justice shall be killed, because he is a disease in the city" (322*d*). For this reason Protagoras defends against Socrates the custom of the Athenians and of other peoples to listen to the expression of opinions by any member of an assembly, when a decision must be taken according to the dictates of justice and temperance about a question regarding political virtue. They think that if cities are to exist, all citizens must share in these virtues. This is proved also by the fact that if anyone falsely pretends to be skilled in other things (*e.g.* in music) he provokes contempt and anger; but when justice and political virtue in general are involved, if a man, who is manifestly unjust, declares himself to be so, he is considered as a lunatic, because the general and settled belief is that one must either share to some extent in this virtue or cease to be among men. Besides, the Athenians hold that virtue does not come from nature (*φύσει*) or chance (*ἀπὸ τοῦ αὐτομάτου*), but that it can be taught,

¹ The myth, in so far as it attributes the first origin of civilisation to the gods, was bound to assume their existence; while Protagoras, on the contrary, declared he knew nothing about them. It is therefore clear that we cannot here find an expression of the ideas of the sophist, who availed himself of a myth to show that religion, language, moral and social life imply the existence of tendencies and habits which all men, at least virtually, possess, while morality proper can express itself only in society and through its medium.

and that those who possess it have acquired it through steady application. Indeed, they do not correct or reprove anyone who has natural or accidental defects, like ugliness and debility, and, instead of being angry with him, they pity him. But they behave quite differently with the man in whom they see qualities in contrast with those produced by diligence, discipline and tuition, like injustice, impiety and, in a word, what is contrary to civic virtue (*πολιτικὴ ἀρετή*); and on such men they shower indignation and rebukes unsparingly. On the other hand, the punishments inflicted on those who are guilty of injustice prove that in the opinion of men virtue can be acquired, because, when the party is not prompted by an irrational impulse of revenge, as a wild animal might be, we punish him not so much in view of the past as of the future, to prevent the guilty man or others from sinning anew. Accordingly, all those who either privately or publicly inflict punishments are necessarily of opinion that virtue can be taught; and, as Athenians use punishments, it is plain that they also are of the same mind (320c-324d).

Socrates, however, had found a difficulty also in the fact that some worthy men (*ἀγαθοί*) cannot make their own children excel those of other men in the virtue they themselves possess. To solve it, Protagoras, setting the myth aside, uses the *logos*. In his opinion, it is necessary to begin with this question: Does one thing exist, in which all citizens must necessarily share, in order that a city may exist? Here, and here only, is it possible to find a solution for this difficulty. Now, if this thing exists and consists in justice, temperance, holiness, in what Protagoras briefly calls the virtue of man (*ἀνδρὸς ἀρετή*); if everyone must share in it; if every action must be performed conformably to it; if those who do not share in it are to be taught and punished that they may become better, being otherwise expelled from the city or killed as incurable beings; is it possible that worthy men should teach their children those things the ignorance of which involves no danger, and neglect those other things the want of which entails death, exile, forfeiture of goods for their children, and utter ruin for their families?

Really human life is, from infancy, a long process of training men in the exercise of virtue. From his birth onwards the child is taught what is just and what unjust, what is handsome and what is disgraceful, what is holy and what is wicked by his nurse, his mother, his pedagogue, his father. Afterwards at school, either under a grammarist or a citharist, he acquires virtue by learning passages of great poets full of moral precepts; or by absorbing rhythms and harmonies he becomes more humane, and

growing himself rhythmical and harmonious, learns to be valiant (*χρήσιμος*) in speech and action, because human life requires rhythm and harmony. The teaching of gymnastics places at the service of an intelligence already formed a vigorous body; so that it may not come about that unfavourable physical conditions should breed cowardice in war and in other forms of human activity. After leaving school men receive new instruction in virtue from the laws, which the city compels them to learn and respect, and which teach them to command and to obey, with punishments for those who are slack in their duty. But how is it then that so many respectable parents have disreputable children (*φάυλοι*)? The explanation is easily found if we consider that virtue is a subject that all can teach. If the existence of the city should depend on all the citizens being flutists to the best of their ability, and if anyone should teach this art to everybody both in public and private and those who played poorly were punished (as we do when laws and justice are in question), is it to be expected that the children of good players should excel those born of indifferent artists? Protagoras thinks that those better endowed by nature (*εὐφύεστατοι*) would emerge, and that often a first-rate player's children would be hardly tolerable, and the other way round; yet all would be clever flute players compared with those who are ignorant of this art. In the same manner, one who appears most unjust among men governed by laws, would shine as an adept in justice, if he should be brought into comparison with men without education, tribunals and laws, not compelled to respect virtue, or with beings resembling the savages staged by the poet Pherecrates in the *Lenaea* of the previous year.¹ If Socrates were to live among such men (as is the lot of the misanthropists in that comedy) he would be glad to meet even the worst Athenians, and would long for the society of his wicked fellow-citizens. As he is in a place where everyone (to the extent of his powers) is a teacher of virtue, it seems to him that nobody is such: in the same way, if he were looking about for a teacher of Greek, he would think he could find none, because all teach that language. It is, therefore, necessary to be satisfied if we find a man who exceeds, though by a little, the others in making us virtuous. Protagoras thinks he is one, as he believes he excels others in causing his fellow-men to be righteous (*καλὸς ἀγαθός*) (324d, 328b).

As the myth and the *logos* are presented by Protagoras without

¹ The *Ἔπιοι* was performed in 421-20 when Pericles and his sons had been dead for some time, that is to say many years after the imaginary date at which the dialogue is supposed to have taken place.

a break, without his having to answer objections from Socrates, it is natural to think that, in their substance at least, they are taken from the sophist's writings and that they faithfully represent his opinions; accordingly, these texts have a fundamental importance for the interpretation of the essence of his thought. Not all the historians, however, seem to have understood fully the doctrines defended by the sophist. Thus Th. Gomperz finds that the myth and the *logos* that Plato attributes to Protagoras are a very clever caricature, which, stressing the good and bad qualities of its subject, covers obscure and contradictory thoughts with a gorgeous veil of brilliant rhetoric. In his opinion, indeed, there is an insurmountable contradiction between the statement that, for the existence of society, all must be endowed with awe and the sense of justice, and the assertion that political virtue is not a spontaneous gift of nature, but the result of diligent study and tuition.¹ To escape the consequences of his statement that, where all teach virtue, there is no room for one who claims he can teach it specially, Protagoras merely uses a high-sounding phrase: a man who exceeds, though by a little.² Pohlenz holds that the foundation of the doctrine maintained by the sophist is very weak, because his argument does not go beyond the belief of the πολλοί, of the people, and the validity of this belief is not examined; besides, he joins Gomperz in charging Protagoras with contradiction.³ According to Taylor, the answer given by Protagoras to the doubts of Socrates has merely a specious plausibility, because all his argument rests on the identification of virtue with the tradition prevailing in a civilised state. What one absorbs from his environment is simply the νόμος, the social tradition of the group in which one lives, which changes from one country to another, so that Protagoras's theory appears satisfactory if we admit, as he implies, that morality is altogether relative; in other words, that no ethical standard is better than *respectability*, namely, what is thought proper in a certain community. To justify him in his profession as a teacher of virtue, that is to make his discourse consistent, we must think that he believes himself possessed of an extraordinary dexterity in catching the tone of the social tradition of the community in which he happens to be, and in conveying it to his disciples. Now it would certainly be paradoxical to admit that a foreigner from Abdera could master the social traditions of the different cities visited by him so quickly as to be able with a course of lectures to instil into a young man the tone of these traditions

¹ *Griechische Denker*, 11⁴, Berlin-Leipzig, 1925, p. 246.

² *Ibid.*, p. 288.

³ *Op. cit.*, p. 87.

more effectively than can be done through his intercourse with the surrounding community. Friedländer, while thinking that Protagoras considerably agrees with Socrates and Plato on many details, affirms, however, that what is fundamental in the latter philosophers, namely the conception that *areté* is knowledge aiming at a determined being, is wanting in Protagoras, who sees in it a *quid* universally known, not needing exact determination, and who never tries to define the precise meaning of the expressions he uses dealing with moral problems, so that his education lacks recognised finality.¹ Besides, in his opinion, the sophist puts forth a theory which is merely naturalistic and relativistic. In reality he bases differences in the moral value of men on natural inclinations, and does not recognise absolute standards of value ; right and wrong are relative because what appears wrong to us seems right among savages. Similarly, the differences between one teacher of virtue and another are relative, not absolute.²

But these judgments and criticisms, to a great extent at least, are unacceptable. The contradiction of which Gomperz speaks does not exist, because if Protagoras affirms that the indispensable condition for social life is the presence of certain ethical inclinations, of a general tendency towards morality, he is also convinced that, taken by themselves, they do not constitute morality proper. Morality can develop only in a community : the moral inclinations make the community possible, and the community in turn promotes their development through its laws and institutions, and causes the whole lives of its members to be a continuous process of education. The germs of morality exist in all men, that is to say, they are indispensable elements of human nature, but in order to create virtue they must develop by means of exercise, practice and tuition. (Here we have a general outline of a theory of education and its elements, which are treated also in some Protagorean fragments.³) A state of pure *φύσις*, namely of a human nature which has not made its ethical potentialities actual, is a state of absence of morality, because it is only through society and its *νόμος* that they are revealed.⁴ Now Protagoras is convinced that the existence of

¹ *Op. cit.*, pp. 246 foll.

² *Op. cit.*, II, pp. 13-14.

³ Diels-Kranz, 80 (= Diels, 74), B, 3 : φύσεως καὶ ἀσκήσεως διδασκαλία δέεται. (Here ἀσκήσις includes the ἐπιμέλεια and ἀσκήσις of Protagoras, 323e). *Ibid.*, B, 10 : μηδὲν εἶναι μήτε τέχνην ἀνευ μελέτης μήτε μελέτην ἀνευ τέχνης. (Here, on the other hand, μελέτη includes the ἐπιμέλεια and ἀσκήσις of the dialogue.)

⁴ According to the literal form of the myth, savages are in the same condition as the whole of mankind was before receiving from Hermes awe

society derives from fundamental tendencies common to all men, who would not deserve this name if they did not live in society, and believes that living in society produces virtue in man: all this implies the acknowledgment of universal ethical values that necessarily and in the same manner force themselves upon all human beings. Therefore we cannot follow Taylor and say that Protagoras identifies virtue with social tradition, with the particular *νόμος* of the town in which an individual happens to live. Its laws teach him virtue, because, in their general directions at least, they obey absolute ethical standards. The fundamental principles stated by Protagoras in the myth and in the *logos*, far from applying the relativistic standard of his gnoseology, have a decidedly anti-relativistic character. With Taylor's criticism, Friedländer's also falls to the ground: and the latter is rather poorly justified because even those who admit the existence of absolute moral standards can say with Protagoras

and the sense of justice, and so they are not men properly speaking. Besides, in the Platonic texts in question, Protagoras speaks of *φύσις* only in regard to savages, and not to designate the presence in men of undeveloped germs of morality. However, in fr. 3 he mentions as factors in education *nature*, practice and tuition, and in the dialogue, in order to explain the differences of moral value among men and how it is that the children born of good parents do not possess the parental virtues, he clings to natural inclinations, affirming that the *εὐφύεστατοι* excel (327b). We can therefore interpret the thought of Protagoras in the manner already mentioned; that is, we can think that he admitted in all men, including savages, the existence of fundamental ethical tendencies inherent in human *φύσις*, which, however, can rise to the level of virtue only in social life through the working of the *νόμος*. (It must be remarked that the *δίκη* which Hermes must bring to all men is not the same as *δικαιοσύνη* and the other virtues which Protagoras designates with the promiscuous terms *πολιτική ἀρετή* (323e) and *ἀνδρὸς ἀρετή*. This is why we have rendered *δίκη* with "sense of justice": it is the germ of *δικαιοσύνη* or justice proper belonging to a man who has ethically developed in society.) One can suppose that in the dialogue Protagoras does not speak of human nature in the sense indicated above, because his purpose is to rebut the theories of those who exalted *φύσις* in general and the particular manifestation of it which, among men, they saw in primitive forms of life. In reality, however, he recognises in man (as shown by fr. 3) a peculiar nature, including the germs of culture; but we are not allowed to affirm, as Nestle does in the introduction to his edition, that, for Protagoras, we must speak, not of teleology proper, but of an unconscious finalism of nature, which was for him a *θεῖον*. Following this line, we should take literally a myth that serves only to emphasise certain fundamental conceptions of what can be called the practical philosophy of Protagoras, who, owing to his relativism, could not claim to possess an objective knowledge of the natural world. The statement that *φύσις* was for him a *θεῖον* is in sharp contrast to all that he says in the myth and in the *logos* of the dialogue (v. p. 290, note above in regard to the meaning to be attached to the myth concerning the existence of the gods).

that the most wicked of men living in society, compared with a savage destitute of any sense of law and justice, appears as a teacher of virtue, since, though violating them on occasion, he recognises at least certain exigencies and rules entirely unknown to the other. Nestle has rightly affirmed that these doctrines of Protagoras's give a foretaste of the Aristotelian doctrine that man is by nature a social animal: ¹ in fact, human *φύσις* virtually includes *νόμος*, so that the latter is not the result of arbitrary convention, but a manifestation of the true nature of man. But, on the other hand, we cannot maintain with Friedländer that the doctrine of Protagoras is mere naturalism, because, though natural inclinations are the basis of education, the latter depends on exercise, practice and tuition. On the other hand, we cannot say with Gomperz that the statement that all teach virtue is inconsistent with Protagoras's profession; because, if all good citizens teach, their tuition is instinctive, unpremeditated, and following traditional lines, while one who, like the Sophist, deliberately aims at forming good men and good citizens recognises the propriety, nay the necessity, of a specific moral and social education, agreeing with Socrates on an essential point. On the other hand, Protagoras is quite rightly censured for not duly clarifying and defining the leading conceptions of his ethics, to which he attributes a universal validity (the moral inclinations that every man must have and the virtues which together constitute the *areté* of a man and of a citizen). It is plain that he derives them from the common conscience and does not discuss them because he finds them self-evident. But in this way he is in contrast with Socrates, who discusses and examines critically these habitual beliefs, so that the Sophist is not so bold an innovator as Plato's master, and appears more attached to tradition than he was, though he agrees with him in recognising the existence of ethical standards absolutely and universally valid. From the texts so far examined, we cannot infer that he tried to reconcile the conception of *νόμος* as founded on the ethical tendencies common to all men with the differences that the laws of the different peoples present: we shall see later on whether he can be credited with an attempt to solve this problem.

The traditionalism of Protagoras appears even more in his exaltation of the *νόμος* in contrast to pure *φύσις* considered as a savage and immoral condition of life. He mentions only a comedy by Pherecrates, but his criticism of the exaltation of *φύσις* conceived as the source of the true and ideal morality of

¹ Zeller, *Philosophie der Griechen*, I, 2^e, p. 389 ¹⁰¹, and Introduction to the *Protagoras*, p. 25.

conduct must refer to other sophists, and principally to Hippias, who in the *Protagoras*, disparaging the νόμος in order to praise φύσις¹ (337c-d; cf. Xenophon, *Mem.* IV, 4, 19), arrives at a cosmopolitan conception. But probably Protagoras wanted to attack, if not Antiphon personally, at least doctrines similar to his, since Antiphon, starting from the φύσις theory, came to conclusions bolder than Hippias's, because he upheld a doctrine not merely equalitarian but altogether anarchic. One may even suspect that Protagoras did not confine himself to criticising the anti-social, but not anti-moral, theories that Hippias, and above all Antiphon or others of his sect, derived from the glorification of φύσις: perhaps he was also thinking of that immoralism which in its name was maintained by the defenders of the right of the strong of which Callicles in the *Gorgias* appears as a stout supporter. This suggestion is considerably strengthened by the fact that doctrines like those stated by Callicles are criticised by the Anonymus of Iamblicus who starts from the premises of the moral theory of Protagoras, and is clearly influenced by them.²

In the first part of the *Protagoras*, in which the sophist develops his thought without interruption, Plato may be thought to give a fair representation of his conceptions; but things alter in the rest of the dialogue in which he is worried by Socrates's arguments; it is indeed difficult to hold that Socrates always alludes to assertions actually made by his interlocutor, because the development of the debate is essentially determined by the purpose in view. We can attribute to Protagoras confidently enough only the statements which agree, or do not contrast, with the doctrines he has presented in the myth and in the *logos*. Thus Socrates, to see if Protagoras holds virtue to be a science, because in this case only it can be teachable, asks how *areté* is related to the particular virtues he has mentioned; that is to say, he raises the question of the unity of *areté* (329b-d) because it is connected with the reduction of the particular virtues to knowledge. But in this way Protagoras is faced with a problem of which he had certainly never thought, as is shown clearly by the inconsistency of his replies (329d, 349b-d). We can more easily perceive the expression of Protagoras's thought in his attitude towards hedonism in the customary sense of the word. Questioned by Socrates if it is good to live pleasantly, and bad to

¹ A. Chiappelli, "Per la Storia della Sofistica Greca" *Arch. für Geschichte der Philosophie*, 3 (1890), p. 17, n. 49, admits that the social theories attributed to Protagoras in Plato's dialogue had been developed in opposition to those of Hippias.

² Diels-Kranz, 88 (= Diels, 82), 6.

do the opposite, he gives an essentially qualified answer: "[Yes] if one lives enjoying fair things" (*Εἴπερ τοῖς καλοῖς γ', ἔφη, ζῶν ἡδόμενος*). Closely pressed by his interlocutor asking him if, like most men, he thinks that some pleasant things are wicked and the contrary, the sophist replies: "I do not know . . . whether I must answer unconditionally, in the tone of your question, that all pleasant things are good, and unpleasant ones are bad; but it seems safer to answer, considering not only our present conversation, but also the whole course of my life, that there are pleasant things which are not good, and that of painful things some are bad and some are not, and thirdly that some are neither good nor bad" (351c-d). Protagoras's reference to the whole course of his life sounds like an echo of his real thought, and was certainly not introduced by Plato simply as a homage to the personal righteousness of the man whom, as a thinker and teacher, he subjects to an unsparing criticism. We cannot, however, affirm that Protagoras rejected all forms of hedonism, because his words quoted above ("yes, if one lives enjoying fair things") suggest that he approved lofty pleasures produced by causes ethically praiseworthy; namely, that in the former he saw the subjective, in the latter the objective aspect of what is good. This interpretation is confirmed by the further development of the dialogue. Protagoras has been led to allow the unity of all the other virtues, but he has made an exception for courage (349d), and has successfully defended his proposition against an attempt made by Socrates to identify it with *σοφία* (wisdom or knowledge) (349d-351b). Then Socrates tries to attain his object by choosing another line. He asks the sophist, who has stoutly rejected the identification of what is pleasant with what is good, to examine this proposition in itself, and see what consequences follow from it. He remarks that even the majority (*οἱ πολλοί*) who reject the identification of what is good and what is pleasant, of what is bad and what is painful, call certain pleasures bad only because they produce griefs and destroy other pleasures; and so they call some griefs good only because they create pleasures and remove griefs. Now, in order that a man may have a guiding principle in practical life, he must take advantage of a science, the art of measurement (*ἡ μετρητικὴ τέχνη*) which will permit him to determine the quantitative relations of pleasurable or painful actions and of the consequences (pleasures or sorrows) resulting from them.¹ For want of this science, one

¹ It is not necessary to inquire here whether the hedonism expounded in the *Protagoras* by Socrates represents actually his thought or that of Plato, or both.

errs in the choice of pleasures or sorrows, that is of goods or evils ; but this means that one acts so through ignorance. So virtue in general is identified with knowledge, and against the assertion of Protagoras the same must be said for courage. The sophist maintains that the courageous face things which most men fear ; now, if we describe fear or apprehension as the expectation of an evil and ask whether the sophist speaks of things to be feared or not, he is obliged to recognise that the first element of the alternative must be left out, because nobody seeks what he considers as an evil. Therefore all, both the cowardly and the bold, face things which they do not fear, so that from this point of view they do not differ. Protagoras objects that the things they are in search of are of an opposite nature ; because one section seeks battle and the other shuns it ; but is such action a fair thing (*καλόν*) or a foul one ? If, as the sophist must allow, it is fair, it is also good and pleasant : it is therefore impossible that dastards, shirking battle, should know that they do not want what is fairer, better and more pleasant. And so the fears and bold exploits of courageous men are not foul and, as a consequence, are fair and good, and those of cowards and madmen are foul and wicked ; but the latter do so through ignorance, which is therefore the cause of their baseness. As courage is its opposite, it must consist in the knowledge of the things to be feared and of those that are not to be feared (*ἢ τῶν δεινῶν καὶ μὴ δεινῶν σοφία*) (351b-360e).

That we cannot recognise a faithful rendering of Protagoras's thought in the assertions attributed to him is evident, if from nothing else, from the fact that he accepts without objection the decisive force of the metretic art in the valuation of quantitative relations of pleasures and sorrow, while the sophist, as we know him from history, had criticised mathematics,¹ for which also in the dialogue he shows no particular appreciation (318d-e). We must remark, however, that, if it is not true, as some think, that at the end of the dialogue Protagoras agrees with the *πολλοί* in accepting hedonism,² we cannot either accept Taylor's opinion that he never admits it as his own.³ Socrates, examining the opinion of the majority, makes it clear that their seeming anti-hedonism unconsciously implies hedonistic premisses, and, besides that, they who reject the value of science must, in order to distinguish what they call pleasures and sorrow, good and bad, use

¹ Diels-Kranz, 80 (= Diels, 74), B, 7.

² H. von Arnim, *Platos Jugend-dialoge*, Berlin-Leipzig, 1914, pp. 7 and foll ; P. Friedländer, *Platon*, II, p. 31.

³ *Op. cit.*, p. 260.

the art of measurement, thus identifying virtue and knowledge. Also Protagoras must reach the same result regarding courage; but this part of the discussion, although Socrates uses hedonistic arguments, completely differs from what precedes: the *καλόν* becomes central and the *ἡδύ* receives a new meaning as it comes to designate hardships, wounds and death for one's own country. If we recollect that Protagoras had said that to live pleasantly is good provided one lives enjoying fair things, we understand that this part examines and criticises the hedonism of the sophist, different from common hedonism, because between pleasures it establishes qualitative, and not merely quantitative, differences.¹ Socrates proves, dealing in particular with courage, irreducible for the sophist to knowledge, that not only common hedonism, but also the superior form of it which he defends, must use science to distinguish desirable from undesirable pleasures, because bad action comes only from ignorance. So Protagoras is obliged to own the identity of courage and knowledge, and, even more necessarily, of virtue in general with knowledge. Only after this discussion is the sophist obliged to confess himself beaten, and this proves that the criticism was about *his own* hedonism; in other words, we must admit that for him good consisted in the pleasures produced by justice, temperance, etc., that is, by the virtue of men and citizens. It is, therefore, evident how wrong are the historians who descry in a passage of the *Protagoras* the sure proof of the application to ethics of the sophist's relativism. To understand correctly the meaning of the passage in question it is necessary not to forget that it forms the starting point of a discussion on the relations between justice and *σωφροσύνη*,² which Socrates tries to identify in opposition to the opinion of the Sophist. He begins by asking his interlocutor if a man doing wrong, inasmuch as he does wrong, can be called wise (*Ἄρά τίς σοι δοκεῖ ἀδικῶν ἀνθρώπος σωφρονεῖν, ὃ τι ἀδικεῖ*, 333b). With a spirited answer, which reveals the personal honesty of the man, Protagoras replies that he would be ashamed to accept this assertion, which, however, is welcomed by many (*Αἰσχυνοίμην ἂν ἔγωγ', ἔφη, ὦ Σώκρατες, τοῦτο ὁμολογεῖν, ἐπεὶ πολλοὶ γέ φασι τῶν ἀνθρώπων*, 333c). Then Socrates begs

¹ The difference between the discussion concerning courage and that which precedes it, has been treated by H. v. Arnim (*op. cit.*, pp. 22-23), and the remarks in the text belong to him; but he is wrong in thinking that in the discussion Socrates expounds Platonic doctrines.

² We have previously translated *σωφροσύνη* by temperance; in this context it is preferable to render it by "wisdom" which includes a two-fold meaning, intellectual and practical.

leave to examine that proposition in itself, and Protagoras, after appearing rather reluctant to defend it, because it is *δυσχερής* (difficult and also disagreeable to maintain), consents to champion it.¹ The proposition in question affirms that some who commit injustice are wise. Now to be wise means to think well, and to think well is the same as to be well advised while committing injustice (*τὸ δ' εὖ φρονεῖν εὖ βουλευέσθαι ὃ τι ἀδικοῦσιν*). But a man, acting unjustly, is well advised if he succeeds (*εὖ πράττειν*). At this point Socrates asks Protagoras if these are good things, and being answered in the affirmative, asks again if they are the things useful (*ὠφέλιμα*) to men (333c-d).² The sophist then very forcibly replies that he calls good also things which are not useful to men (333e).

Socrates, observing that Protagoras is becoming excited and fretful, and is preparing to answer in an unfriendly spirit, endeavours to deal with him gently and asks him if he calls good those things which not only are useful to no man, but which are not useful at all (333e-334a). Then the Sophist answers negatively and makes a lengthy speech to show that some things are useful to men, others only to animals or to plants; that some, good for some parts of these plants, are injurious to other parts; and even taking the body of man, what is good for the external is very bad for the internal parts, so that physicians forbid their patients to use oil except in very small amounts. So varied and multiform is the Good! (*Οὕτω . . . ποικίλον τί ἐστὶν τὸ ἀγαθὸν καὶ παντοδαπόν*, 334b). The hearers cheer loudly (334a-c). If we connect the passage in question with what precedes and with the words just quoted, it is evident that it cannot imply a relativistic interpretation of morality. Protagoras, declaring that he calls good also things that are not useful to man, has not behaved as was required of him as counsel for the defence of the moral opinions of the majority based on utilitarianism; and that

¹ Taylor rightly remarks that henceforward Protagoras behaves as the counsel for the defence in support of current morality, which he considers wrong. The criticism is not directed against Protagoras of Abdera, but against the ethics of respectability, of which he consents to become the mouthpiece.

² The logical nexus is seen by Taylor better than by any other. He (after having remarked that Socrates has used the ambiguous expression *εὖ πράττειν* which may mean "to act well" and "to have success") affirms that his purpose is given by the statement defended in the *Gorgias* (499d) and in the *Republic* (I, 457b)—that one who commits injustice never reaches his real aim, true good, the good of the soul; by sacrificing it to something less valuable, he never obtains success. Socrates' questions intimate his intentions, because for him and for Plato real good is also real usefulness (*op. cit.*, pp. 250-251). This argument, if duly developed, would have led directly to the identification of justice and *σωφροσύνη*.

is why he chafes and is excited. In his long speech he makes an effort to regain in the opinion of the listeners his customarily superior position, which had been threatened by the pressing questions of Socrates. Socrates does not comment on the words of his interlocutor, nor does he attach any importance to them—a way in which he would not have acted if he had seen in them the genuine expression of a momentous and dangerous theory. This, and even more the statement, "I understood he was not satisfied with his previous answers" (335a), shows that Protagoras did not maintain an ethical relativism in absolute contrast with the doctrine of the initial myth and *logos*, which affirm the absolute nature of moral values to be accepted by all men.

The absolute and universal character of fundamental ethical values firmly maintained by the sophist in the *Protagoras* are in irreconcilable contrast with the so-called *Apologia* of the *Theaetetus* (166d-167d). In it Protagoras, conjured up from Hades to defend himself from possible objections, applies the man-measure principle to ethical and social reality, and maintains a utilitarian interpretation of knowledge and ethics. All opinions, including those which concern moral and social conduct, are equally true, but they differ as to their utility. Therefore, what appears just and handsome both to individuals and cities is such as long as it is thought to be such. Minds sometimes consider good what is useful and sometimes the contrary, according as they are in a healthy or unhealthy condition. The function of teachers and orators is to cure diseased souls and to make them accept as good what is useful. Now the contrast between these opinions and the propositions defended by Protagoras, in so far as he is presented living and teaching in the dialogue (leaving aside other arguments which might be given), is enough to show that the *Apologia* is not an exact expression of his thought. However, what is said in it of wise and good orators inducing cities to make more useful decisions, might be a development and interpretation of an attempt to reconcile contrasting elements: we mean, he may have intended to reconcile his conviction that the *nomos* in general is based on ethical tendencies common to all men and always forms the rule of justice and virtue generally, with the variety of positive laws in the different states, which cannot be accounted for by their natural and historical conditions. He, however, had taught that such laws are derivations and determinations of the universal *nomos*, but that they do not all express it with the same degree of perfection, and are not therefore equally useful; the function of the rhetor is to replace the less perfect by better laws.

III.—KNOWLEDGE, REALITY, AND OBJECTIVITY (II.).

By H. F. HALLETT.

II.

THE SOURCES OF OBJECTIVITY.

It has been my purpose, so far, to lay bare and to discredit the uncriticized presumption that lies at the root of all philosophical theories that concern themselves exclusively with the objects of perception and thought, that knowledge is essentially a subject-object relation, and that the real as such must be the object of contemplation, whether naïvely accepted, critically corrected, or amplified by description. This is what I condemn as "radical objectivism". Whether these objects are regarded, with the idealists, as falling within the nature of the knowing mind, or, with the realists, as independent existences, their adequate apprehension is taken as the sufficient fulfilment of purely cognitive endeavour. A complete cognition of the nature of an entity as an *object* is thus widely regarded as revealing its essential nature as a *real*. It is true that idealists have gone somewhat further in claiming that the nature of such objects is, at least in part, determined by the activity of the cognizing subject, and sometimes even that objective nature is in the end wholly determined by that action, either in the finite percipient or in some infinite mind: though Berkeley denied that the objects of our knowledge belong to the creative mind of God after the same fashion as they exist in and for our finite minds.¹

¹ The divine consciousness is held by Berkeley to differ from that of man in two ways: (i) in being devoid of certain ideas, *e.g.*, that of pain, about which God knows but with which he is not "acquainted"; and (ii) in the nature of his relation to the objects of his knowledge: God's perception is never sense-perception, for he is the creator of all ideas or objects and is thus not affected, as we are, by an "other". Yet God's intellection is analogous to ours, and is "properly" and not merely "metaphorically" analogous. When we attribute intellect to God we do so in the plain sense of the term, and not as when we speak of "the finger of God". Nor is God's intellect analogous to ours as ours is said to be analogous to vision; it is not a higher *kind* of apprehension, but a perfect edition of our kind. Cf. *Hylas and Philonous*, Dial. III; *Alciphron*, Dial. IV, 18-21; *Siris*, 254, 289-90.

Realists, on the other hand, have not generally attempted to take the inverse view and to derive the nature of the object from some ultra-objective source, having preferred to take the object as positing itself, and to regard it as an independent, and not a metaphysically derived, existent. This has been due in great part, I think, to a certain anxiety lest to make the object a derived existent should lead, in the absence of all clue to the mode of its derivation, to an assertion of its unreality: as indeed it did when Kant derived some part of its nature from the action of transcendent things-in-themselves,—though here, it is true, the issue was somewhat clouded¹ by his having derived the remainder from the action of the ego. Locke's position is, perhaps, more nearly *à propos* in this connexion, for he expressly denied the derivation of any part of the character of "ideas of sensation" from the mind, regarding them as causally derived from real things that partly resemble them, and partly "answer to" them.² Thus Locke would seem to emphasize realism by making

¹ I.e., it clouded the factitious issue between idealism and realism with their common assumption that "self" is essentially subjective mind, and "other" spatio-temporal object. It is the substance of what I advance that Kant's attempt to trace objectivity to the co-operative actions of "self" and "other" as things-in-themselves, so far from clouding the main metaphysical issue, first made explicit in some degree the principles, already implicit in the Spinozistic metaphysics of nature, that govern the emergence of spatio-temporal entities.

² The case of our "ideas of reflection" is rather different, for presumably the mind contemplates its own operations, according to Locke, without any intermediate representative. Thus the real operations of the mind neither resemble nor "answer to" the ideas, but are identical with their "objective contents". I will not attempt to determine whether this reduces "contemplation" to "acquaintance".

My interpretation of the implications of Locke's treatment of "innate ideas and principles" may perhaps be disputed on the grounds that (i) he allows that the mind is operative in the processes of ideation and cognition (as the admission of "ideas of reflection", as well as the formal definition of "knowledge" indicate); and (ii) our ideas of "secondary qualities", at least, are held by Locke not to be taken, *in the form in which we sense them*, from things.

Though the point is not essential to my main argument, let me say in defence of my interpretation: (i) that so far as real existence is concerned, the operations of the mind are only held by Locke to be veridical where they issue in related ideas that "answer to" real things*; and (ii) that in so far as the actual content of secondary qualities is supplied by the mind, it is "extraneous and superinduced". Unfortunately, Locke's official account of the nature of knowledge prevents me from clarifying my dictum by confining it to the character of veridical ideas: for knowledge is said to be concerned, not with ideas *simpliciter*, but with their "agreements

* I may not say "correspond with real things", for relations belong only to ideas and not to things.

objects derivatives from operant real things, very much as Berkeley emphasized idealism by making them derivatives of cognizing or creative minds. But we must not, I think, accept either the one pole or the other without essential qualification or limitation: for, on the one hand, we have no clue to the manner in which objects could be supposed to be derived from an action exclusively cognitive, the work of which is ostensibly, and indeed *ex hypothesi*, to apprehend and not to create;¹ and, on the other hand, the derivation of our ostensible objects from "things" that are still conceived as objects in their primary characters, and even in their underlying and supporting substantiality,² though as objects concealed from direct human apprehension, can hardly be said to advance matters far beyond naïve dogmatism.³

From all this uncritical quasi-analysis we must have recourse to a metaphysically reflective examination of the primary data and problems of experience. So far I have been content to speak with the many as if our primitive experience were concerned with data: the data of outer sense, and the data of inner consciousness. And no doubt this is a proper characterization of these elementary factors in human experience, and duly emphasizes the peculiar limitations of human knowledge. But elsewhere⁴ I have pointed out that the term "datum" bears reference primarily to our empirical procedure, and that what is rightly so called in that reference, and is regarded there as illuminating the *tabula rasa* of our ignorance, is equally rightly, regarded from the metaphysical standpoint, no more than "blind spot" in the transparency of perfect knowledge, so that

and repugnances"—and that in spite of all relations being held not to be "contained in the real existence of things" (*Essay*, ii, 25, 8). Whether these difficulties would be resolved or mitigated by an admission of the reality of relations, elsewhere implied by Locke (*loc. cit.*, iv, 6, 11), I will not enquire.

¹ Truth depending on the non-interference of cognition with the object cognized.

Of course, I do not deny that with an infinite creative being action in general and cognition may be much more closely allied than in finite experience where non-cognitive action is formative rather than creative in character.

² For though we have no idea of substance as such, this is not because substance is other than objective, but because the human mind happens to be limited to the apprehension of its qualities, and cannot penetrate to its real essence. Other minds may be better equipped, and thus apprehend this too, and presumably as an *object* of cognition.

³ It also conflicts with Locke's own "historical plain method".

⁴ Cf. *Creativity, Politics, and the A Priori* (Arist. Soc. Supp. Vol. xii), "The A Priori", pp. 172-177.

the metaphysician is apt to think of these primitive factors, not as data, but as "*ablata*", not as something given to us and presented, but as something taken from us and occulted. It is this double perspective of the human mind that I wish to emphasize when I say that our most primitive experience, equally with more developed cognitions, is that neither of pure presentation nor of pure occultation but of wonder, and our most elementary cognition equally with the more complicated experiences of scientific construction and philosophical speculation is not of data alone nor of *ablata* alone, but of data-*ablata* or *problemata*, and our typical cognitive attitude throughout one of query and unrest and intellectual effort. Further, this duality exhibits itself equally in the efforts of the empiricist and those of the metaphysician, leading the one through processes of construction, amplification, and analysis of the data, and the other through those of speculation about, and justification and valuation of, the *ablata*. But in fact every datum is by its very nature, as given but not understood, *ablatum*; and every *ablatum* by its very nature as occult, necessarily datum: and it is thus that the primitive factors of human experience, equally with its developed products, are never mere content presented or occulted, but content presented *as* occulted, and therefore problematical.¹ Thus the empiricist is not content with his data, and the metaphysician is unquiet about his *ablata*: it is this double perspective that gives rise to the native restlessness of the questioning human mind; for to rest content with data would be to fall beneath human dignity, and to neglect *ablata* to make pretence to a status transcending humanity. We must begin where we find ourselves: not with passively accepted data, nor with *ablata* evaded or repudiated, but with *problemata* to be faced and engaged in a never-ending speculative and exploratory activity.

This polarity of human experience is exhibited, as I have said, not only in the complicated questions raised by the more

¹ It is this false start in empirical philosophy that determines its special problems; for datum as content presented, even as "objective content", is the *ignis fatuus* that misleads the epistemological traveller towards the quagmires and swamps where the unhappy ghosts of engulfed empiricists pursue their unending "wild goose chase" for the subject among the objects, or are condemned to a Danaidean attempt to hold the waters of the *a priori* in their *a posteriori* sieve. The corresponding danger to metaphysical philosophy is less notable, but not less urgent, when it leads to neglect of factors of experience not easily brought within the sweep of fine speculations, or long-established valuations, or justifications derived from deep-seated prejudices.

concrete objects of our developed cognition, but even at its very roots, with those simplest and most primitive factors that we commonly regard as unquestionable data :¹ thus I have spoken of the necessity of having "recourse to a metaphysically reflective examination of the primary data and *problems* of experience": not that we are faced with data *and* problems, but that every datum is itself, not so much a content to be accepted and used as object of intuition, basis of construction, or material for analysis, but as problem for metaphysical elaboration and solution.

Take, for example, our outer sense-data, or indeed any form of empirical content, whether natural or moral: we shall find that it is as true to say that it is *taken from* us as that it is *given to* us. I am given a content that, in being given, is also opposed to me: it is experienced as primarily "mine", yet only mine as object, and thus "not-mine". It is given to me only in so far as it remains over against me: it is given, not as subject, but as object. The same metaphysical duality is even more conspicuous with our moral experience; for here what is given is always a "right" that does not seem good, or a "good" that does not seem right. This is the primitive empirical character of morality in finite experience; it bears the *schema* of moral obligation, and is the source of the Kantian principle of the essential opposition of duty and inclination. The unsatisfactoriness of this opposition as it is expressed by Kant lies, not in its assertion as a primary experience, but in the tendency to treat it as an incorrigible *datum*, instead of as a *problem*, indeed *the* moral problem. How can moral right and moral good be in essential harmony in spite of their primitive appearance in opposition? ² Here again, therefore, in moral experience, there is given a "mine" (*i.e.* a

¹ And concerns here, as in all cases, not only the occult content presented, but also, and even more urgently, the objectification involved. More urgently, because the objectification implicates also the content which by reason of its resultant externality is no more than appearance. The principles here operating will, I hope, become clearer as we proceed; but it is important to remember that what incapacitates "contemplation" is not the "otherness" of the "object" but its externality, *viz.*, its spatio-temporal objectivity: we have perfect "knowledge" of the "other" as we "enjoy" it in "community".

² Kant does, of course, harmonize them in relation to the *bonum supremum*, which is the good will moved solely by respect for what is right; but he fails to show how the *bonum consummatum*, or happiness proportioned to virtue, which is an essential constituent of the *summum bonum* (*i.e.* virtue and its congruent happiness), is in harmony with morality in the condition of the world with which morality has to do, but only in a world amplified or corrected by a moral theology largely invented for the purpose.

duty that I respect) that is "not-mine" (i.e. a good that does not appeal to me); or a "not-mine" (i.e. an end out of harmony with my respect for morality) that is "mine" (i.e. a natural good). And this is the problem of ethics rather than an ethical problem: so also the metaphysical duality of the empirical given is the problem of knowledge rather than an epistemological problem. Further, the two are essentially the same problem: for knowing is, after all, a special form of practice,¹ and must be governed by the same or by analogous principles.

Now this problem of the metaphysical duality of the "given" in experience is susceptible only to metaphysical treatment: it must appear as an insoluble mock-problem when we attempt to deal with it on an empirical level and by empirical methods. How can what, as truth, is primarily "mine" be, in the same act, as object, "not-mine"? How can what, as right, is primarily "mine" be, in the same act, as repellent to me, "not-mine"? How can what, as seductive, is primarily "mine" be, in the same act, as wrong, "not-mine"? If we take these as empirical problems concerning objective content, to be resolved by purely empirical methods, we shall be led either to make the object a mere subjective modification, or, contrariwise, to make the subject the passive mirror of an independent real: in either case excluding the possibility of a credible theory of error; we shall defend either a puritanical hatred of delight, or a cyrenaic repudiation of essential moral values: in either case excluding the possibility of a credible theory of evil. The duality of the given must be interpreted metaphysically, and subjected to a metaphysical etiology.

¹ Human knowing, I think, holds an intermediate place in the hierarchy of action: the action constituting the inseity of physical reality lies on one side of it; the creative love "that wields the world" on the other. Doubtless the latter may be styled "perfect knowledge", just as we might, as a gloss upon Alexander, describe "compreence" of objects as a sort of degraded knowledge.

With human cognition, involving as it does initial query and subsequent learning, the cognitive action seems to be degraded to *conatus*. Even here, however, the *conatus* is concerned with the attainment of knowledge, and not with knowing itself, which at every stage is non-temporal action. Thus "seeing" is an eternal action, though we think of it as having temporal duration. The "seeing" itself is no process, and takes no time, though there may be delay in the physical and physiological processes involved.* With perfect knowledge even these temporal factors are absent, and creative love involves no *conatus*, or passage from *potentia* to *actus*: it is *actio pura* and issues in *actus purus*.

* Sight *qua* sight is *actio pura*, though no such abstract enacting is extant: all sight is degraded by process, and its object thus infected with *potentia*.

I have just drawn attention to the need for a limitation to the common opposition of theory and practice: knowing is an action; it is not a process. Even with human cognition where learning seems to take precedence of completed insight, we have to deal, not with a process, but with a *conatus*: with a "movement", not from content to content, but from *potentia* to *actus*. Thus just as morality is concerned, not with objects of "contemplation", but with "enactings", so also cognition is not itself an object to be dealt with as contemplated content, but is an "enacting" that is not itself a temporal process, still less a causal process, even when it is conceived as occurring in a time-series. For even in that relation it is a *conatus* and not a process, and thus belongs to the sphere of action and not that of object. This is commonly concealed by that misleading trick of style, to which I have already made reference, by which we substitute abstract substantives, such as "knowledge", "judgment", "perception", etc., for the more precise gerunds: "knowing", "judging", "perceiving", etc.; and whatever may be said of the stylistic advantages of the substitution, and its general inoffensiveness, which I do not deny (as my own script indicates), there can be no doubt that it constitutes a most fertile channel of the fallacies arising from the natural "radical objectivism" of the human mind.¹

There has, undoubtedly, been no great scarcity of philosophers willing to assent to the proposition that knowing is an action and not a content or process of contents: even for Locke, who denied the derivation of "ideas" from the nature of mind, knowing is not the mere passive reception of such contents, but the perception of their "agreements and repugnances"; and

¹ I do not wish to deny, or to be too lighthearted about, the complexity, intricacy, and even intellectual danger, of the problems raised by the distinctions I have emphasized. How, for example, are we to deal intellectually, not to say intelligently, with entities that are not rightly conceived as objects, when speech and thought alike appear always to objectify their subjects? How can we have and communicate knowledge that is not capable of being taken as knowledge of objects? How, indeed, can we know, or be in any way aware of, or speak intelligently about, such entities without in the same act falsifying them? On some of these problems I have already touched, and I agree that we must not belittle them by resting content with facile solutions or obscure expressions: but neither must we deny their incidence and insistence on the ground of empiricist or positivist preconception. It is well to remember that it is possible to have "knowledge of the unknowable" because we can "enjoy" what we cannot "contemplate", and also that this claim is itself a paradox. We have here problems presented to us by the very nature of human experience that we must face and if possible resolve, but never attempt to conceal or cast aside as "nonsense".

it is generally recognized that the knowing mind *does* something when it apprehends its object, even though it does not qualify or create it. The nature of this action is more explicitly and adequately recognized by Thomas Reid as "judgment"¹ (though this characterization overlooks the very important "physical" and "physiological" action or *conatus* of the total "self"), and this account is developed in greater detail in the *Critick of Pure Reason*, and is the basis and differentia of all "idealist" or "transcendental" logic.²

But what has not, I think, been properly realized is that this non-temporal action is not unilateral but bilateral, that it is not merely an action directed by the "self" towards the "other", but that this is met and matched by an inverse action towards the "self" issuing from an active "other". This "re-action" is, of course, "cognitive", but not in the same sense as that of "the self". Though knowledge is bilateral it is not necessarily, or indeed often, mutual. The "cognitive" action of the "other" may be named "appearing" or "manifestation", and it answers to the "contemplating" or "apprehension" of the "self". The object is thus universally a congress of non-temporal actions of "self" and "other", and not a passive given content; or if we naïvely take its content as datum, we

¹ "Instead of saying that . . . knowledge is got by putting together and comparing simple apprehensions, we ought rather to say that the simple apprehension is performed by resolving and analysing a natural and original judgment" (*Inquiry into the Human Mind*, ch. 2, sect. iv). "A man who feels pain judges and believes that he is really pained. The man who perceives an object believes that it exists . . . nor is it in his power to avoid such judgment. And the like may be said of memory and of consciousness. Whether judgment ought to be called a necessary concomitant of these operations, or rather a part or ingredient of them, I do not dispute. . . . If this determination be not judgment it is an operation that has got no name; for it is not simple apprehension, neither is it reasoning" (*Essays on the Intellectual Powers of Man*, VI, i). The only intellectual power from which Reid excepts judgment is "bare conception" (*loc. cit.*), an exception that is again and again rejected by his eminent editor Sir William Hamilton (*Works of Thomas Reid*, I, pp. 243, 375, 414, etc.): "In so far as there can be consciousness there must be judgment". It will be seen that my demand is for an even greater extension of the principle, to action in the sub-conscious, *i.e.* to what appears as the physical and physiological realms, where the term "judgment" would be unsuitable.

² Which, however, I regard as an all too fertile union of logic and epistemology, only in intention less mischievous than the sterile attempt to beget epistemology out of logic. The root vice in each case is the failure to distinguish "content" from "action": the one treating "action" as "content" under the name of "judgement"; the other supposing that "action" can be cozened out of "content".

must remember that epistemologically it is related to the "self" as an *externally contemplated*, and to the "other" as an *obscure manifestation*: the obscurity being attributable to the externality that arises from the imperfect "community" of "self" and "other".

The data of experience, then, constitute no mere series of contents from which "self" and "other" must be constructed as complex objects, or among which they may be found, by inspection or analysis, to lie secreted. "Self" and "other" are to be discovered, not as constructed or unmasked objects, but as active metaphysical sources of the objective contents that we so easily take to be the data of experience. These, as I have said, are always given as issuing from the congress of "self" and "other", and thus as *problemata*. Nor, except as we confine ourselves to that part of practice that is theory, must we conceive the action of the "self" as limited to cognition, though this may be the nearest approach of the finite self to *actio pura*. Equally, except as we conceive a perfection of knowledge that is not distinguishable from creative love, we need not suppose that the action of the "other" involves knowledge of the "self"; though awareness in some form, however elementary and primitive, is unlikely ever to be wholly absent. But to consider this would be to reverse the rôles of "self" and "other"—a perfectly legitimate procedure (for the "other" is "self" to itself, and the "self" is "other" to the "other"), but one which raises questions much more speculative and obscure.¹ When I say that finite cognition is bilateral, then, I do

¹ But not unimportant, for it raises the interesting question, crucial for natural theology, of the possibility of the less perfect being's apprehending the existence and nature of the more perfect that operates through it. I have said that the sculptor enjoys his tools and materials as he works through and in them: but does the chisel "enjoy" the agency of the sculptor in the act of surrendering to it? Or are his arm and hand "aware" in any primitive sub-conscious sense of their being used effectively for some work whose nature and value transcends them? If so, it may well be that we too can enjoy our action as a channel of Providence, though unaware of the values thus ensured. "If any man will do His will he shall know of the doctrine" (John vii, 17)—a principle which doubtless leaves open the door to every conceivable species of fanaticism, but which may yet contain a simple truth that we know not how to apply. The hand and arm and chisel of the sculptor know nothing of the Apollo, and may thus most grossly mis-enjoy their own obscurely felt "effectiveness" as they surrender their *conatus* to the master (for a good stonemason may be a bad sculptor). Effective for what? So we may enjoy the general sense that the "goodness of life" transcends our worth; that our well-being is more complete than our own action in our empirical environment could ensure; that in the intellectual life there is often an inspiration

not mean that it is mutual, but that in the cognition of objects the finite action or *conatus* of the "self" has congress with the finite action or *conatus* of the "other"; and from this there emanates the object that is externally contemplated by the "self", and that obscurely manifests the "other". But finite cognition from its very nature as a congress of *conatus* is mainly "learning", and never complete, though it is the ripening of the *conatus* of the "self" towards *actio pura* for which objectivity is transcended in creative love.

In the space that remains to me I propose briefly to elaborate and illustrate the general principles thus indicated, by reference to the distinguishable, but essentially related, realms of Space, Quality, and Time, with which perceptual and scientific objectivity are mainly concerned. The order of my treatment of these topics must not be taken as indicating an essential order of priority in their emergence; they issue from their metaphysical roots together, and in thorough reciprocation. I shall not hesitate, therefore, to introduce each in the exposition of the others so far as it may seem convenient, and I hope without fallacy.

(i) *Space.*

It has often been suspected that our original apprehension of space is closely connected with our muscular and kinaesthetic experience. Some such view was in fact formally advanced by Berkeley,¹ and there is much to be said in its favour, at least as an introductory phenomenological analogue of a more profound and discriminating metaphysical theory of the nature and origin of space. Its main point, however, does not clearly appear if we confine our attention, as we most readily do, to the special case of *visual* space. There can be little doubt that our natural tendency to place visual perception in the forefront of epistemological inquiry and speculation is a pregnant source of confusion and unnecessary difficulty. It may be that vision is the most highly developed of our senses, the most practically

mixed with our conscious powers; that the moral life involves the recognition of a demand that irrupts upon our natural motives. Just as the chisel or the hand of the sculptor by their very nature, conformation, and training are suited for surrender to the agency of sculpting, so we may feel the impulse to surrender our powers to some supra-personal agency vaguely conceived as of transcendent value. Our "knowledge" of "God" may thus depend in the end upon our "enjoyed" suitability for surrender to agency that transcends us, and "towards" which our agency is naturally directed; and in that surrender we may "enjoy" a deity that we do wrong to attempt to contemplate as object.

¹ Cf. *Principles of Human Knowledge*, I., sect. 116; *De Motu*, sect. 55.

informative, and even, in a sense, the most "intellectual"; but these qualities are precisely those that disqualify it for the elucidation of the primary principles of objectivity. To trace and understand the metaphysical etiology of space we must turn first of all to the most primitive of our sense-experiences, *viz.*, those of *touch*, both "external" and "internal", *i.e.* exploratory touch and muscular and articular sensation (as we name them when we interpret them at a more sophisticated level). And we must examine even these primitive experiences in relative isolation from what we believe about them on the basis of an external observation of what we take to be their "organs" and physiological and physical "conditions", through the use of other senses and other organs. That is, we must confine ourselves to "di-aesthesia".¹

¹ I must add here a short explanation of my use of this term, though a more detailed account will be found in my articles on "The Roots of Duality in Human Knowledge" (*Proc. Arist. Soc.*, 1937-38, pp. 168-188), and "On Things in Themselves" (*Philosophy*, xiv, pp. 155-179). In these articles I drew a distinction, first, between a sense-organ (*e.g.*, the eye) as an object of external contemplation, for which it is the occupant of no more than a part of the observer's visual space, and as a functioning (*i.e.* seeing) entity. When we "look through" the eye the only way in which we can be said to "see" it is as the percipient's whole field of visual space within which visual objects are distributed. In the former of the two articles referred to I called this a "di-optical" perception of the eye in distinction from the ordinary external optical perception of it; and I extended the visual analogy to other forms of sense-perception, calling (*e.g.*) the *touching finger's* perception of itself as perceptually active, a "di-optical" touch-perception. Later this struck me as rather unsatisfactory, and in the latter of the two articles I coined the term "di-aesthesia" for this form of awareness. I also saw the danger attendant upon the extended use of the visual analogy, to which I have referred above. There is, of course, a sort of paradox in the assertion that the eye that sees external objects as visually decorated contours by optical contemplation, also in the very same act "sees" itself by "di-optical" or "di-aesthetic" contemplation as the visual space within which the optical objects are distributed. But, I think, the paradox is inherent in the situation of a relatively isolated visual action. If that action could be regarded as an independent thing-in-itself we should be compelled to limit its awareness of itself to an "enjoyment" of its agency. As will be seen in my main argument, however, the objectification which results in vision as a form of "contemplation" from the co-operation of the "other" with the "self", infects the "visual" action itself, which thus objectifies itself as visual space. If the action were unaffected by an "other" that visual space would be empty, and thus would cease to be objective space. The "visual" action's enjoyment of itself would then find no self-objectification, and contemplation would disappear. This, in some sense, corresponds to the position of the infinite *ens in se*, and illustrates the difficulty that I find in Spinoza's view (if it is his view!) that Substance as such is "extended", or is Extension, and indicates my reason for regarding the Attributes in his theory as

Let us take first the case of a percipient provided with a tactual sense-organ capable of movement and of the muscular and articular percipience normally associated therewith. This is, of course, an external or objective description of the situation, and we must not think of the percipient himself as gathering the principles governing his percipience from an external observation of this kind. He must be confined to what he can come by in the course of the inner functioning of the "muscular", "articular", and "sense-organic" apparatus that I have externally named and described. He must depend solely upon the direct internal experience of "di-aesthesia", for this is the primitive datum with which all percipience begins, and out of which all objectivity must be capable of being elaborated.

Now all that our maimed and blinkered percipient can obtain by direct di-aesthetic perception when his arm appears to an external observer to move in such a way as to bring his finger into contact with the table, is a series of "*sensa*" of one kind followed by a terminal "*sensum*" of another kind. In the more sophisticated and ambiguous account of common life, we say he has a series of muscular and articular "*sensa*" located in the limb, followed by a tactual "*sensum*" located where the tip of the finger touches the table; but all this is supervenient "rationalization", if the term may be allowed in this connexion,—our experimental percipient has only the series of "*sensa*" and the terminal "*sensum*": or so for the moment I will say. If it is objected that I am proposing an impossible hypothesis, I shall agree: no such percipient could be actual. I go further and say that the very idea of the occurrence of a series of *sensa* that are no more than *sensa*, is even worse as an hypothesis. In presenting my methodological monster, therefore, I crave indulgence; for my intention is to exhibit its mon-

belonging more properly to *Natura naturata*, and not, as is usually supposed, to *Natura naturans*. Spinoza's own authority seems to be ambiguous: "Intellect, even though infinite, pertains to *Natura naturata* and not to *Natura naturans*" (*Ep.* ix); yet "I mean the same (as Substance) by Attribute except that it is called Attribute with respect to the intellect which attributes such and such a nature to Substance" (*ibid.*). Cf. "By Attribute I understand that which the intellect perceives of Substance as if constituting its essence" (*Eth.* i, Def. iv); and *Eth.* i, xxix, Sch.: "By *Natura naturans* we are to understand . . . those Attributes of Substance . . . But by *Natura naturata* I understand . . . all the *modes* of God's Attributes in so far as they are considered as things which are in God." Nor can the matter be regarded as incidental and unimportant: for the "intellectualism" of Spinoza's metaphysics hangs upon it: is Extension an Attribute of God as *Natura naturans* or only an objectification? Is God *action* or *object*? For Spinoza, apparently, he is both.

strosity by indicating the etiology of externality or spatio-temporal objectivity.

Our percipient, then, is not merely maimed and isolated: he is by consequence extremely naïve, knowing nothing about arm, muscle, joint, finger, table, or even of moving. For there can be no *sensum* of motion: the series of *sensa* may show a relative suavity or continuity in its transitions, but it remains a series of sense-contents, whereas moving as such is not a set of transitions of contents, but an action, and can only be represented objectively through the, perhaps unnoted, introduction of action or *conatus*: and this is no *sense* of effort.

Thus, if the description I have so far given were a complete account of the "di-aesthetic" experience of our percipient, it is evident that, since moving cannot be sensed, neither can the *distance* moved by the sense-organ be sensed as content (*i.e.* as space passed over). But, as I have been contending, the percipient is never given such a mere series of varying contents, but always contents proceeding from an active "other", and apprehended in a perceptual *conatus* of the "self". All *sensa* from the very start involve, if only as problem, derivation from non-objective "self" and "other", and what I now contend is that the varied series of *sensa* apprehended by our percipient is interpreted as, *and transmuted into*, a "kinaesthetic" series with a "tactual" limit, through the enjoyed agency of the "self", diminished by finiteness to *conatus* by congress with its "other", whether that "other" be muscle, or sense-organ, or table (as we come to describe them in completer and more sophisticated perception). The *sensa* are related as stages in a spatio-temporal movement through the striving or *conatus* that governs their emergence. Thus the distance traced by the finger in reaching the table is the objectification of the *conatus* of the "self" governing the occurrence of the series of *sensa* up to the limit where the *conatus* is opposed by the counter-*conatus* of the "other". Each *sensum* contemplated is located according to the *conatus* governing its occurrence; and this is true of the location of the muscles and joints equally with that of the finger-tip and table, though the latter opposes a counter-*conatus* to the striving of the "self", while the muscles and joints do so as "tools" rather than as "buffers". Yet if they were *perfect* tools, then, like the so-called "ether" of space, they would act as pure media, in which there is no location.¹

¹ It would perhaps be truer to say that the perfecting of the "tool" transforms it from tool to "medium". A "tool", in other words, is a hybrid between a "buffer" and a "medium".

Normally we take "kinaesthesia" as leading to "touch", and the distance of the object touched is the objectification of the total *conatus* governing the occurrence of the whole series; but at any time we can re-focus our attention and consider the distance of an intermediate muscular or articular *sensum* in the same way. We then contemplate the muscle or joint as an object at a distance, as we did the table; and this is facilitated, either by limiting the *conatus* at that *sensum* (as when we say that we repeat the movement), or by opposing an "other" to its striving (as when we "feel" the limb with the other hand).¹

The "distance" of a *sensum* is thus the objectification of the *conatus* governing its acquirement in congress with an "other", and the relativity of spatial measures arises from the incongruity of phenomenal or objective space and its generating metaphysical or active *conatus*. In another point of view the relativity of these measures proves that space is not an ultimate but a derivative, and that the derivation is not phenomenal but metaphysical. But it does *not* prove that space is subjective.

The account of objective perception that I have given leaves the percipient's own body in the happy but ambiguous position of being at once, in itself a *conatus* di-aesthetically identical with the space within the qualified contours of which the striving is unimpeded, yet, externally, also a separate ² object among others occupying a common space. The point of difficulty in this account is the correlation of the "di-aesthetic" and external

¹ In such a combined movement of two limbs we objectify a more complex *conatus* of the "self", which is probably typical of that which lies at the root of the tri-dimensionality of empirical space. The detailed metaphysical etiology of such a space lies beyond both my present purpose and achievement. "The other hand" is, of course, a sophisticated description at this stage of the argument (just as is "muscle and joint"). One very important difficulty in expounding the genesis of space, and objectivity generally, is the dual rôle of "the body" as at once "object" for external perception, and spatialized *conatus* for "di-aesthesia". This is a legacy of our intermediate status in the hierarchy of being: a perfect agent would have no objective "body", for it would have no "other", and thus no objective world either to limit its agency or to constitute its objective "field". Its objective world, if any, would be a self-creation, and thus indistinguishable into "body" and "environment". At the other extreme, a being on the lower threshold of agency would at once, by its tenuity, de-substantialize its objective universe towards qualitative nonentity, and contract its "body" towards quantitative nonentity. Our common distinction between "the body" and its "environing world" belongs essentially to our middle stage of existence, as neither perfect nor evanescent: for us the "other" is both "limit" and "field", and the object-world, by consequence, anatomized as reciprocating and mutually limiting "body" and "world".

² Separate, but not unrelated. The "body" is *resonant* to nature.

"bodies": the "di-aesthetic" body seems to be an obscurely occupied space of "muscular, articular, and organic" *sensa*, plus the permeable space¹ on the other side of which lies the world of qualified objects; while the body as externally perceived is one among others moving in the permeable space that lies between them. Evidently what is at issue here is the extension of the contours of the body beyond the skin to the objects that are perceived. As I have suggested in the last footnote, this difficulty does not arise if we confine ourselves, with our monster-percipient, to external touch-perception: for here the body does extend up to the object, which we must touch if we are to have direct touch-perception of it. But notably with sight, and perhaps also with hearing, our perception is *normally* across an interval of permeable space lying outside of the eye or ear, and in no very obvious sense *appended* to them. This is a distinction of great importance, and one which lies at the root of my objection to the selection of vision as the typical form of perception for such an inquiry as the present one. For it implies a further complexity which, if attacked too soon or left unnoted, must cloud our insight into the operant principles of the metaphysical generation of space.

To meet this difficulty let us next turn our attention to the perception of space as we find it in vision, and, less distinctly, in hearing. A good approach to the special conditions governing these more highly developed forms of percipience is by means of some suggestions of Descartes in his account of vision in the first discourse of *La Dioptrique*. He there compares visual perception of distance with the tactual perception of a blind man exploring his vicinity with a stick.² For the blind man the

¹ This "permeable space" is not contemplated by *external touch*, but is certainly so by *sight*, and perhaps also by *hearing*. Its *tactual* contemplation is mediated through kinaesthesia.

² "Il vous est bien sans doute arrivé quelque fois, en marchant de nuit sans flambeau, par les lieux un peu difficiles, qu'il falloit vous ayder d'un baston pour vous conduire, et vous avés pour lors pû remarquer, que vous sentiés par l'entremise de ce baston les divers obiects qui se rencontroyent autour de vous . . . Il est vray que cete sorte de sentiment est un peu confuse et obscure, en ceus qui n'en ont pas un long usage; mais considérés la en ceus qui, estant nés aveugles, s'en sont servis toute leur vie, et vous l'y trouverez si parfaite et si exacte qu'on pourroit quasi dire qu'ils voyent des mains, ou que leur baston est l'organe de quelque sixiesme sens qui leur a esté donné au défaut de la veue. Et pour tirer une comparaison de cecy, ie desire que vous pensiés que la lumiere n'est autre chose, dans les corps qu'on nomme lumineux, qu'un certain mouvement, ou une action fort prompte et fort vive, qui passe vers nos yeux par l'entremise de l'air et des autres corps transparens, en mesme façon que le mouvement ou la resistance des corps, que rencontre cet aveugle, passe

tactual *sensa* are felt, not in his hand, but at the other end of his *bâton* which he uses as a sort of extended limb. By this means the range of his tactual experience is greatly amplified; for instead of having to grope with his hands beyond their convenient reach in order to touch more distant and awkwardly placed objects, he can get his terminal tactual *sensa* after shortened series of muscular and articular *sensa*. Thus distance is measured by a new scale: there is, for "di-aesthesia," an interval of permeable space between his hand and the place of the tactual *sensum*, viz., what appears in external perception as the "length of the stick" that is being used as his mediating "tool". Now Descartes suggests that we have here a rough analogue of what occurs in sight, though now the *bâton* is not a "material" thing, i.e. does not appear for external perception as a qualified spatio-temporal contour: it is "light" (in one of the several senses of that term), or its "medium". For "di-aesthesia", however, apart from the felt "weight" and other "qualities of the stick" (as we call them in a more sophisticated external perception), the "light" or "ether" operates very much as does the blind man's *bâton* which, as we have seen, is transformed into permeable space or distance. Just as the blind man "feels" the curb of the pavement that lies beyond his convenient direct reach, so I see a star far beyond the limits of my optical system or any possible movement of it, because a "medium"¹ extends from my eye to the star, as the *bâton* extends from the blind man's hand to the curb. In this way, as I have elsewhere² said, "my eye touches the Great Nebula, and rests upon Orion". Along the *bâton* there operates a *conatus* and counter-*conatus*; along the rigid "ether" there operates the "action" and "reaction"³ that we call "light".

vers sa main, par l'entremise de son bâton. Ce qui vous empeschera d'abord de trouver estrange que ceste lumiere puisse estendre ses rayons en un instant, depuis le soleil iusques a nous : car vous scavés que l'action, dont on meut l'un des bouts d'un bâton, doit ainsy passer en un instant iusques a l'autre et quelle y devoit passer en mesme sorte, encore qu'il y auroit plus de distance qu'il n'y en a, depuis la terre iusques aux cieux."

¹ Both *bâton* and "medium" are, of course, objects and thus, as such, make no qualified appearance in "di-aesthesia".

² Cf. "On Things in Themselves" (*Philosophy*, xiv, loc. cit.), where this subject is also discussed in a different connexion.

³ Equal and opposite, as the pressure and counter-pressure of the finger and the table. Newtonian "action and reaction" have, I believe, sometimes been expounded in terms of "force", and this again in terms of the tendency to produce a change of "motion"; but presumably the conception is *concrete* only in so far as we ourselves exert and "enjoy" such "action" in producing or opposing changes of motion; and the common tendency is, I think, to exclude this "enjoyed" action, and so reduce

In visual "di-aesthesia" this places the *sensum* at a distance across the permeable space occupied by the "medium", so that this, like the blind man's stick, is an extension of the body, though not occupied by muscular, articular, or organic *sensa*. A similar account can be given for hearing: for an external description of audition the *sensum* which is felt in the ear is transferred to the far end of the column of vibrant air that extends from the ear to the bell; though for auditory "di-aesthesia" the sound is found where it is, *viz.*, in the bell: thus making ear and "medium" together a total extended ear.

Now the principle that is at work in these more complicated circumstances is still, I think, that of space as the objectification of *conatus*: what for external perception are more or less rigid, elastic, "*baston*", "ether", "air", in the real are enfranchizing co-operant "actions", and thus in "di-aesthesia" objectified as the permeable space that forms the sphere of free *conatus*. The "medium" or mediating "tool" magnifies the *conatus* without changing its character: or, more precisely, this is its function *qua* medium, though clearly in the cases of the bâton and the air there is the modification of the *conatus* congruent with the operation of the "medium" as "tool" co-operating with the "self", and as "buffer" opposing it. Thus the "medium" in so far as it modifies the *conatus* of the "self" is an opposing and co-operating "other", and appears as object; in so far as it amplifies the *conatus* of the "self" it belongs to

the law to a formal equation. I do not deny that this is legitimate for the purposes of phenomenological science. As to the example of "light" as such "action and reaction", we commonly speak of the light as passing from the object to the eye, and not from the eye to the object; but Descartes holds that the "action" is in both directions, and suggests, neatly but somewhat unconvincingly, that this may account for nocturnal vision: "Mesme vous pourrés aysement decider la question, qui est entre eux, touchant le lieu d'où vient l'action qui cause le sentiment de la veue: car, comme nostre aveugle peut sentir les corps qui sont autour de luy, non seulement par l'action de ces corps, lors qu'ils se meuvent contre son baston, mais aussy par celle de sa main, lorsqu'ils ne font que luy resister; faut il avouer que les obiects de la veue peuvent estre sentis, non seulement par le moyen de l'action qui estant en eux, tend vers les yeux, mais aussy par le moyen de celle qui, estant dans les yeux, tend vers eux. Toutefois pour ce que cete action n'est autre chose que la lumiere il faut remarquer qu'il n'y a que ceux qui peuvent voir pendant les tenebres de la nuit, comme les chats, dans les yeux desquels elle se trouve; et que pour l'ordinaire des hommes, ils ne voyent que par l'action qui vient des obiects: car l'experience nous monstre que ces obiects doivent estre lumineux ou illuminés pour estre veus, et non point nos yeux pour les voir" (*La Dioptrique*, Discours I.). But the rejection of his suggested explanation of nocturnal vision need not carry with it the rejection of the reciprocation of "action" and "re-action" in the case of vision.

it, and in "di-aesthesia" appears as permeable distance. In the case of tactual perception the "medium" is the *conatus* that is objectified as physical body with its physical extensions (e.g., the blind man's stick); with audition it is the *conatus* that is objectified as the "ear" and its circumambient air; and with vision it is the *conatus* that is objectified as the eye with its focussing apparatus and humours and the "rays of light" (however interpreted) that lie between the coloured object and the eye. The "ether of space" would then appear to be an ultimate or ideal "medium", so perfect as to mediate nothing: the objectification of the ultimate unity of "self" and "other"; the spatial representation of the non-spatiality of infinite action; empty space—a "Nothing that nothings"! All actual "media" are thus in varying measure both "tools" and "buffers", in external perception contemplated as lying beyond the "sense-organ" of the perceiver, but in close communication with it; in the perceiver's own "di-aesthesia" contemplated as permeable space or distance, in the measure of their perfection as media; but as qualified objects interposed, in the measure of their opposition and co-operation.¹

I have already said that it is no part of my present intention to enter into the more difficult deduction of the details of the structure of empirical space as three-dimensional. The space of physical objects appears to be roughly Euclidean and of three dimensions, whereas the space I have considered as the objectification of *conatus* is relatively undifferentiated except, perhaps, in relation to "distance". The schematization of our primitive space to the more precise form is evidently correlated in some way with the conformation, structure, and distribution of our sense-organs. We must not trace it to these, of course, for that would involve us in a vicious circle; and it may not be easy, even if possible, to trace it to its metaphysical source. The distinction of three dimensions in visual space is evidently correlated with the distinction of the *distance* of the *sensum* from its *extent*; and the latter again with the complex character of the eye, and especially the retina, which is not an elementary visual unit but a collection, association, or system, of visual

¹ The same is true in principle of the objective body itself, and even of the sense-organ; when the latter functions efficiently it becomes a "transparency" for di-aesthesia, but when it functions badly it is interposed as a qualified opaqueness over the field; thus deafness confuses the auditory world, and the "jaundiced eye" draws a veil of colour over the visual world. The main difference between the body and its environment, apart from percipience, is one of intimacy of control; this is evidently a function, not of objectivity, but of *conatus*.

elements.¹ The same is true of the organs of touch and hearing, though more loosely—with the correlative loss of precision for which they are notable. This would seem to connect the distinction of dimensions, two of extent and one of distance, in some way with the co-operative complexity of the *conatus* of the “self”, or of its “other”, or both, in addition to the opposition that generates distance; and this would assimilate the schematization of primitive space to a sort of *formal quality* differentiated within the general “roominess” of the latter: a suggestion, *very seriously intended*, but not here to be pursued, that conveniently introduces us to the second main factor of objectivity, *viz.*, Quality.

(ii) *Quality.*

Objectivity is primarily constituted by spatio-temporality, so that its derivation is concerned mainly with the origination of space and time rather than with that of quality.² Nevertheless, every empirical object possesses qualitative content within its spatio-temporal contours, so that it is necessary to include some discussion of the principles governing the presence of objective quality. My present treatment is thus concerned rather with “qualityedness” than with “quality”, for I cannot now venture seriously upon problems so esoteric, and largely beyond my competence, as the deduction of the specific contents of visual, auditory, olfactory, and other empirical qualities from the *conatus* of the “self” in congress with that of its “other”, even in abstraction from their spatio-temporal distribution.³ Apprehension of “self” and “other” is not, we have seen, posterior to spatio-temporal distinction, but is at its

¹ The direction in which I should look for a clarification on the subject would be a comparison of the structure of the retina with that of the total touch-organ, *viz.*, the body as a whole: though with this the association of elements is freer owing to our capacity to move the limbs relatively to each other—a capacity denied to the “rods and cones”. But this again might be compared to the condition of the blind man’s bâton, which is a rigid organ capable of being moved as a whole but not appreciably bent or stretched: its efficiency, in fact, depending upon this rigidity. Further, we must not forget that we have two retinae capable of effective relative motion, and also that the focussing apparatus of the eye gives it an advantage over the organ of touch.

² Other than the precise “formal quality” to which I have just made brief reference, which is introduced as the three-dimensional, Euclidean (or other) structure of empirical space.

³ The matter cannot, of course, be wholly ignored even here. I have also lightly discussed the subject in *Aeternitas*, pp. 175-179.

root. Quality is derived from "community",¹ and as apprehended evinces it. Thus two agents in complete and harmonious "community" retain their distinctness as agents because they *are* agents and not objective contents subject to the Principle of the Identity of Indiscernibles. This complete "community" of distinct agents is, in fact, the relation of "love", and the apprehension of quality as such is always of this character even when the "community" of "self" and "other" is limited by the opposition and strife that makes objective appearance as the spatio-temporal distribution of quality. Knowledge *qua* knowledge is *actio pura* and terminates in the "self" or the "other" as things-in-themselves; knowledge *qua* human is mainly *conatus* and terminates in qualified spatio-temporal objects: we learn.

In dealing with the metaphysical generation of space I have laid emphasis on one side only of the relation of "self" and "other", viz., their opposition and mutual limitation. Though it is not their mutual opposition *simpliciter* that generates space, but rather the *conatus* of the "self", it is the resistance to that *conatus* by the "other" that generates the contours of the object without which space would be empty, and thus nothing objective, i.e. not space. A "self" with no "other" to limit it would thus not appear in "di-aesthesia" as permeable space, for "di-aesthesia" in the strict sense of the direct contemplating of an objective world would not arise. When, however, we pass to the generation of quality, we must emphasize the other "moment" in the relation of "self" and "other". For this relation, where there is objective appearance of "other" to "self", is not merely one of opposition and mutual limitation, but also of "resonance" and mutual co-operation. It is from this that "qualifiedness" is metaphysically derived. But again, just as space is generated not by mere opposition but by the resistance of the "other" to the *conatus* of the "self" under the condition of their formal "community", so quality is generated, not from their mere "community" (for in love's "enjoyment" of the "other" the "community" is complete, and yet without objective qualitative appearance), but from the co-operation of the "other" with the *conatus* of the "self" under the condition of their formal opposition.

In order to bring home this distinction of the "moments"

¹ For the significance of this term see the discussions of the symposium on "The Moral Good as a Relation between Persons" in *Hume and Present Day Problems*, Arist. Soc. Supp. Vol. xviii, esp. pp. 106-122, 144-178.

of the relation of "self" and "other", let us now suppose that our maimed and blinkered percipient's tactual organ is not pressed against the table by a muscular system, including a set of muscular and articular sense-organs (the description is, of course, external and sophisticated), but by some extraneous means: there is now presented a tactual *sensum* without the "kinaesthetic" *sensa* apprehended as derived from *conatus* (i.e. what we call "muscular effort"): my contention is that this abstraction does not eliminate the awareness that the tactual *sensum* is derived from the congress of active "self" and co-operant "other", but only the more clearly distinguishes "self" and "other" as *conatus* other than that expressed as "muscular effort". The co-operant *conatus* that issue in the tactual *sensum* belong to that *sensum* itself in our experience of it: for as given even in abstraction from all "muscular" effort it is a "mine" that is also a "not-mine", something that I enact with my "other", our contour of "community", of mutual agency that unites us without merging us as *agents*; the objectification of our inchoate "love", and the faint analogue of procreation.

Let me repeat that I do not assert that we have, either here or elsewhere, a *sense* of action or a *sense* of conation or a *sense* of effort: this is, indeed, the very thing that I am concerned to deny. If there were a *sense* of action we should not need to have recourse to metaphysical generation. A *sense* of action would objectify what in itself is no object, and thus could only falsify it. Our apprehension of action is not as objective content, but as self-identity and other-identity: an "objectless realization". The quality that is datum is not passive content, but content that is both "mine" and "not-mine", an emanation of the co-operation of the action or *conatus* of "self" and "other". I am not attempting at the moment to deduce the *sensum* from the co-operant actions, though a complete understanding would, I think, require that also, but only to make clearer the metaphysical relation to "self" and to "other" that belongs in actual experience to each *sensum*. So far as this argument goes the *sensum* itself must remain, in Leibnizian phrase, "occult".¹

¹ In spite of this self-imposed limitation I will add the following remarks on the etiology of quality: (i) It is noteworthy that what is qualified is not space in general but spatial *extent*, so that the genesis of quality is somehow bound up with the differentiation of space into three dimensions: a topic detailed analysis of which I have also excluded from my main treatment. But I suggested "very seriously" that I take spatial *extent* to be correlated with the complex character of the sense-organism as a

Let this, then, stand as my truncated account of the metaphysical interpretation of qualifiedness as it makes appearance

whole, and of each sense-organ; and to answer metaphysically to "the co-operative complexity of the *conatus* of the 'self', or of its 'other', or both" (p. 321). (ii) In *Aeternitas* (*loc. cit.*) I expounded the generation of quality in terms of "creative synthesis" or "transformation without succession", to which I had been led by Spinoza's doctrine of the "affects" (and especially *acquiescentia* and *beatitudo*); and I indicated that this deduction was from the phenomenological standpoint, and that in my view a metaphysical deduction of quality as a contraction, deformation, or degradation of action would be more appropriate: that is by nature. The main objections to phenomenological exposition that starts from primitive touch-quality, taken as identical with the "resistance" or "opposition" of the "other", and interpreted as "impenetrability" or "firmness" in its spatio-temporal location, are (a) that it tends to overlook the part played by the co-operation of "self" and "other" at the contour mapped out by their opposition; and (b) that in regarding the "higher" qualities as spatio-temporal syntheses of variously distributed "resistances", it can only avoid the interpretation of the synthesis as aggregation or systematization by calling it a *creative synthesis*: thus in effect begging the main question, *viz.*, the genesis of the "occult" quality-content which, however it may be based on the synthesis of "resistances", is not identical with it, but is, if not something *more* (for we never apprehend, *e.g.*, both the sound and the aerial vibrations that "produce" it), at least something *other*. But, it may be asked, does not an equal objection apply to the attempt to launch a metaphysical exposition? For how does the contraction, deformation, or degradation of the "enjoyed" action or *conatus* of the "self" or "other" or both issue in contemplated objective content under their opposition? How does obstruction yield objectification; and why in particular are actions in congress objectified as contour occupied by *such and such sensa*? Evidently the qualification is a function of the spatio-temporalization, and particularly of the dimensions of *extent*: but what function? I reply that it must be taken as a function not only of *extent*, but also, and even more vitally, of *time*, and we cannot hope to formulate an adequate account of the function without reference to the genesis of this cardinal factor. If we are ever to succeed in construing the complete *volte face* (as at least it seems) from "enjoyment" to "contemplation", from an *in se* to an *ab extra*, it must be by reflection upon the totality of qualified spatio-temporality as a concrete epigenesis: and for that we are not yet prepared. (iii) We must have recourse, therefore, for the present at least, to the phenomenological exposition. When we do so we find, I think, that with primitive touch-percipient we are better placed than with the more characteristic quality-perceptions where the question is of more vivid interest, but the answer more remote. "Impenetrability" or spatio-temporal "occupation" that first makes spatio-temporal contours empirical is fairly readily identified as a spatio-temporal version of active "opposition" or "resistance". We then pass to the complication of this arising from the extent and special conformation of the contour of mutual resistance, and its synthesis under the *nisus formativus* of the unity of the "self" as it operates within the sphere of the interaction of "self" and "other". Thus the primitive tactual quality gives place to the "higher" qualities of complex touch, sound, colour, etc., in relation

in our sense-experience, belonging to spatial contours because deriving from the same congress of "self" and "other", but expressing their co-operation, where the spatial contours express their opposition and mutual resistance.¹

(iii) *Time.*

It is a phenomenological commonplace that in the objective world we have to do, not with space *and* time, but with space-time, and though I have given extended reason² for the rejection of any spatialized version of time, we may nevertheless expect to find a metaphysical ground for their phenomenological association. I shall contend that it arises from their common origination from the congress of the *conatus* of finite "self" and its complementary "other". We have seen the origination of a parallel union of space and qualifiedness issuing from this situation, and giving rise to qualified spatial contours; but it

to the appropriately "resonant" "synthesizing sense-organ" (as we say, using terms that bear sophisticated reference to external objective perception), or "synthesizing agent" (if we emphasize the metaphysical sources of objectivity). As to the genesis itself, I do not think that we can do much more than describe it as "creative synthesis", and illustrate it from our recognition that, *e.g.*, seven dots "appear" either as a heptagon, or as a cube, or as a pyramid; a very smooth surface pressed at an acute angle "feels" fluid; the lowest pedal work of an organ is "felt" rather as vibratory pressure than as "note"; and so on. (iv) The phenomenological exposition thus involves the generation of *sensa* under the synthetic action of the "self" as it is subjected to the opposition of the "other" with which it is in some "community". The "self" thus contemplates an extended object at a distance qualified by that *sensum* or those *sensa*, and thus manifesting a congruent, but inverse, synthetic *conatus* or action in the "other". I say "inverse" because our objectification of the "other" is based upon its mode of affecting the "self", and not upon its intrinsic action (as analogically a "red" object reflects, but does not absorb, the "red"—is not inwardly qualified by it). Thus to the other imperfections of "contemplation" we must add its inveterate tendency to judge the "other" by its effect on the "self", and not by its inner causality, and thus to regard it as no more than a *means* to the *conatus* of the "self"; whereas in our "enjoyment" of the "other" there is mutuality, we take it as an *end* in itself, we enjoy its co-operative causality. (Cf. "The Moral Good as a Relation between Persons": *Hume and Present Day Problems*, Arist. Soc. Supp. Vol. xviii, pp. 144-178.)

¹ I do not mean, of course, that the contours express opposition not based on *formal* co-operation; or the qualifiedness, co-operation not based on *formal* opposition: opposition and co-operation reciprocate though with differing emphasis. Quality, as distinct from qualifiedness, depends even more notably on the co-operation of the "elements" of the complex "self" with each other and with the "whole" self in its co-operation with the "other".

² Cf. *Aeternitas*, chs. 1 and 2.

must be confessed that these contours fall short of full objectivity by reason of their timelessness. The objects of experience endure, and this further essential factor of empirical objectivity urgently demands deduction. The insubstantiality of qualified spatial contours arises from our failure so far to do justice to the substantiality of action as a thing-in-itself from which time emanates.

Action *qua* action (*actio pura*) terminates in itself as *actus purus*:¹ it is thus that knowledge *qua* knowledge is eternal and creative (as epistemological idealists have realized, though I think that, limiting knowledge to "contemplation" and its derivatives, they have wrongly applied the principle), while knowledge *qua* human "contemplation" is generated in time and terminates in objects. Human contemplation is *conatus* ripening towards *actio pura*, i.e. it is *learning*; and it originates, as we have seen, in the congress of the finite "self" with its "other". Thus its object, in the measure of its objectivity, transcends "self" and is temporal. This, indeed, is the essence of epistemological realism, though it ignores the ground of the transcendence of the object, taking it as self-positing. The objects of human contemplative apprehension thus lie between the eternal *actus purus* of the infinite being-in-itself, and the timeless *potentia pura* of non-being: they are striving, enduring beings, congruent with a striving, enduring "self" or learning subject. The characteristic objects of such finite experience, therefore, are no mere data to be passively accepted (and thus timeless), nor are they pure *creata* spontaneously posited by the "self" (and therefore eternal). If, again, we describe them as "constructions" from data (i.e. as data in matter but *creata* in form), we must not forget that the "data" are from the start *data-ablata*, i.e. *problemata* the solution of which is imperative; and that the "construction" is not extraneously created and superadded to them, but is imperatively educed as answer to the problems that are set. So space is generated by *reaction*; qualifiedness by *co-action*; and similarly, as we shall see, time is not a *given* but is generated by relative *inaction*; but all *sub specie conatus*: the *actiones* suffering a formal deformation through their mutual opposition, essentially qualified as it is by their co-operative "resonance". Thus time is metaphysically derived from eternity, and its genesis is no mere phenomenological process but a metaphysical epigenesis that,

¹ Cf. "Per causam sui intelligo id cuius essentia involvit existentiam." (B.D.S., *Eth.* I, Def. i); "(Substantiae) essentia involvit necessario existentiam" (*ibid.*, I, vii).

taken in abstraction from the total efflux of objectivity, must appear as an amazing xenogenesis. Again, from the side of human learning, time is elaborated as answer to the problem set by the experience of a finite agent that, *qua* agent, is eternal; but, *qua* finite, at once opposed by its "other" and temporally perseverant within the "field" provided by it: at once negated by its determination, and determined by its negation.¹

The general principle governing the derivation of objectivity we have seen to be the duality of the finite *actus* issuing from the duality of the *actiones* that are its origin: it is an *actus-potentia* and not an *actus purus*. The duality is already faintly discoverable in the form of problem in the primitive data of experience: for every datum is at once given to the "self" *qua* subject by the "other", and, contrariwise, given by the "self" to the "other" *qua* object. It is at once a "mine" that is "not-mine", and a "thine" that is "not-thine". Thus objectivity or qualified spatio-temporality is the "*Lebensraum*" provided for the "appeasement" of the finite *actus-potentia*, and our external striving life the ordered, but ever alien, development of the "self" towards a "union of hearts" with the "other". The action of the "self" is "telescoped" to *conatus* in its relation to the object, its creativity to striving, its knowledge to learning, its eternity to time. Thus arises for the finite agent the distinction of *actus* and *potentia*, and the *actus purus* of an *ens in se* is contracted, deformed, and degraded to temporal objectivity or *eventum*. The "end" of *conatus* as sought is "not-yet", but as accomplished is already "past": it is not eternal but "occurrent", *i.e.* a temporal and transient happening. And this is the datum universally of our subject-object experience, *viz.*, the *problem* of the nature of a given that can be both "not-yet" and "past", or to speak without undue sophistication, of a given that is both "do-able" and "done", the *actus* of which is differentiated as *potentia* and *factum*.

Further, the "temporality" of this *actus-potentia* (if I may so name its problem—looking forward to its solution) does not pertain to it in isolation from its generating *actiones*, but only in its derivation therefrom. It is the eternity of its originating source that generates the temporality of the *eventum* or object, and the duration of its *conatus*: these *actiones* in their imperfect, but appropriate, congress are degraded to *conatus* by opposition

¹ For the essence of empirical finitude in this region is not division and *partialitas simpliciter*, but this qualified by responsiveness: the finite agent is a microcosm, and not a section of *actio pura*, and is thus in essential relation with its active complement. (Cf. *Aeternitas*, pp. 88-93, *et passim*.)

and its concomitant "resonance" and mutual enfranchizement. By their impoverishment the eternity of the *actiones* of "self" and "other" generates the temporality of the emanated *eventum* or object; and it is when we invert this order of priority that we erroneously regard the generating "self" and "other" also as temporal: taking the temporality of the object as datum, and temporally relating the "self" to it, while identifying the object with the "other".¹ We thus think of the "self" as occupying a "specious" present uniting the "not-yet" with the "just-past". This is the characteristic fallacy of the "radical objectivist" seeking to make the "self" a temporal *object* instead of an eternal generating *agent*. The "specious present", however specious it may be (and undoubtedly is) in so far as its actuality is misconstrued as a duration-datum combining past and future elements without problem, is real as the eternal action-origin generating time, and is indubitable even as empirical *problematum*. The "present" that is nothing in time, an ideal non-durational division of "past" and "future", and a problem for subject-object experience, comes into its own when it is recognized as the "eternal 'now'" that gives birth to time, and is only describable as a "now" at all in relation to the generation of the "past", and as the "origin" of action, and thus also of the *conatus* after a "not-yet". Temporal "action" is confined to the present because it *defines* it.

It follows from what I have said that all contemplated time is past, and with it all objects and events. But past time

¹ In the act of generating both space and time the "self" posits itself as the "origin" for measurement; but in itself it is "origin" in a far more vital sense than this mathematical idiom connotes: as *fons et origo* it is neither external nor temporal, but internal and eternal. The "now" and the "here" are thus essentially original, and only derive temporal and spatial status or interpretation, respectively, by reflexive reference from their own offspring. Thus also, the phrase, so much bandied about by divines, "an eternal now", is least applicable where it is most commonly applied, *viz.*, to the divine existence. For this is eternal *sans phrase*, and incapable of being referred to a time-series, because it has no given "other". But the phrase is applicable with some significance to the "present" of a finite agent which in itself as the origin of time is eternal, yet, in relation to the past time that it has generated, and an imagined future time conceived *sub specie praeteriti*, comes to be falsely regarded, *sub specie temporis*, as occupying the "moment" of time dividing these: a "moment" that must in truth either be without duration, or must possess a "duration" that does not endure because its past and future remain together but unappeased. What is called the "specious present" is thus the "eternal now", but so far from being a specious unification of "past" and "future", it is an eternal metaphysical origin, falsely conceived as phenomenologically related to its own emanation.

separated from its generating non-temporal present is itself non-temporal: a mere "sense"-less "t"; a "neutral form of externality"; a paradoxical "fourth dimension" of space. It becomes temporal through its eternal generation. Reflection, again, leads us to misinterpret the indeterminate domain of freedom *sub quadam specie praeteriti*, as a not-yet or time-to-be, i.e. to be generated and thus made past. Nor is the image wholly misleading, for finite freedom is not *actio pura* or creative spontaneity, but the partly determinate "opening" provided within the opposition of the "other" in "community" with which the "self" can develop its potency. But it is through this "opening", and not through the opposition or limitation, that the "other" enfranchizes the "self"; so that the notion of time as a *totum* of "past" and "future" divided by a moving "present", and qualitatively identical or uniform throughout, misses its true nature, and raises vicious ethical problems too familiar to need any emphasis of mine, by making freedom a myth.

I have attempted only to trace objectivity to its metaphysical source and not to derive empirical objects from the actions of finite or infinite agents. In the main I have limited myself strictly to this modest programme, though by way of footnote I have occasionally transgressed. That the doctrine that I have attempted to formulate makes the world of objects a relativity-world gives me no qualms in view of the exact inquiries into the "nature of things" by recent mathematical physicists. But it does not make it a "subjective" world, though it does deny to objects a full metaphysical reality: for equally it involves their unideality. In deriving objects, not from the action of the finite "self" in isolation, or as epistemological "subject", but from its congress with its active complementary "other", it resolves and transcends at a single step the tiresome but age-long idealism-realism dispute. The derivation of objects is neither epistemological nor phenomenological, but metaphysical. For the infinite being-in-itself it is true, and of great metaphysical import, that knowledge as *actio pura* is identical with "creation", though here objectivity is superseded in the perfection of the "infinite love wherewith God loves himself" into infinite hierarchical differentiation, in which *actus purus* is one with *actio pura*, and only distinguishable by the finite intellect as it works towards the real as an ideal upper limit.¹

¹ In this connexion I can, perhaps, bring out the significance of the distinction and identity of Substance and its Attributes expounded in the

For the finite agent *actio* and *actus* are divorced, and the scope of objectivity congruently limited. It issues from a hierarchical

famous definitions of Spinoza that have given commentators grounds for such varied interpretations; and also my own attitude to it: "Per substantiam intelligo id quod in se est . . . Idem per attributum intelligo, nisi quod attributum dicatur respectu intellectus" (*Ep. ix*); "Per attributum intelligo id quod intellectus de substantia percipit tanquam ejusdem essentiam constituens" (*Eth. I, Def. iv*). The distinction of Substance and Attribute is that perceived by the intellect between *actio pura* and *actus purus*: but for Spinoza it was *not*, as in my view it *is*, based merely on the analogy of the empirical distinction of finite *actio* and its *actus-potentia*, having no application in that form at the level of the infinite *ens in se*. For him *actio pura* as *ens in se* actualizes itself as *ens pro se* or *actus-object*, i.e. as Attribute. Thus an Attribute is no mere distorted or imperfect appearance perceived only by finite intellect: it maintains its status as *actus purus* even for *intellectus Dei*. And this is the ultimate basis of Spinoza's magnificent assertion of the infinity of the Attributes: their objectivity (*respectu intellectus Dei*) requires this infinite variety to off-set the incommensurability of "object" and "agent". True, this demand would lapse if *Natura naturans (actio pura)* were taken as actualizing itself non-objectively: but in the absence of a credible metaphysical etiology of objectivity, such a doctrine would provide no basis for a philosophy of objective nature. Desiderating this, Spinoza was impelled to assign objectivity to Substance itself by identifying it with its infinite Attributes, making the distinction intellectual and the identity creative, while also leaving the *mutual* distinctions of the infinite Attributes as a charge upon the transcendency of the *intellectus Dei*, which is thus said to have as little correspondence with human intellect as the Dog-star with the barking animal (*Eth. I, xvii, Sch.*). The cost of the reconciliation of the incommensurability of "agency" and "objectivity" is thus the majestic superstructure of the infinite Attributes (by us unknown and inconceivable except for Extension and Thought: the latter of which is in fact not "objective" at all, even if it is confined to "contemplation"); a transcendent *intellectus Dei* capable of holding in a single unique apprehension infinite insulated variations of *actus* (that depend upon their insulation for the maintenance of their distinction from *actio*); and the rather unconvincing series of phenomenological transitions from Attributes to immediate Modes, from immediate to mediate Modes, and the last sheer drop thence to the remote finite modes: all conceived as "objects exhibiting agency" according to their status. Evidently, therefore, there is very urgent need for some such simplification and "short-circuiting" of the *apparatus metaphysicus* as is made possible by my derivation of objectivity from finite agency, and its consequent exclusion from the infinite. Now I trace all this complication in the end to Spinoza's uncritical acceptance of the subject-object view of knowledge. It is true that in connexion with his distinction of kinds of knowledge he seems often to approach the perception that *Imaginatio* and *Scientia Intuitiva* are distinguished as well by type as by relative truth-claim. The close association of *Scientia Intuitiva* with *Amor intellectualis* is evidence of this; but in general (as the doctrine of *Idea ideae*, however interpreted, illustrates) he is an intellectualist held fast by the "contemplation"-view of knowledge, which, as I have said, survives so far as we can understand it even for *intellectus*

range of being that transcends but animates it ; a range for which knowledge is not external contemplation, but enjoyed agency ; and existence is not impervious objectivity, but action, and at best creation. The individuality of agents, even when they are finite, must not be defined as imperviousness, as if even perfect enjoyment of the "other" by the "self" necessarily

Dei. The emphasis which I have laid on "enjoyment" as knowledge *par excellence* permits me to retain the association of knowledge and love, and indeed to identify *actio pura* with enjoyed creative love actualizing itself, not as objective Attributes, infinite Modes, and finite psycho-physical things : "omnia quae ab aliquo infinito intellectu concipi possunt" (*Eth.* I, App.), but as the infinite hierarchy of *agents*, "ex summo nimirum ad infimum perfectionis gradum" (*ibid.*). For thus *actio pura* and *actus purus* are genuinely identical. If now it is said that the derivation of objectivity from agency is an attempt to "square the circle", since they are evidently incommensurable, I reply : that would be true of any attempted *phenomenological* derivation of "object" from "agent," or "agent" from "object". Yet this is the only non-metaphysical alternative to a sort of "Cartesian dualism" for those who simply find agency and objectivity empirically associated ; but it is not true of the *meta-physical* etiology, which is in fact made urgent by this very problem. If, again, it is said that it all comes in the end to very much the same thing whether we invoke "creation" to explain with Spinoza the occurrence of finite psycho-physical *objects* or modes, or, with his critic, the actuality of finite *agents* that by their congress make objective appearance, I reply : the main purpose of my discussion has been to indicate how finite agents, through their agency, may appear as objects ; but so far as I know no one has yet indicated how objects, through their objectivity, can exert agency — the conception of "energy" and of its "conservation" sufficiently illustrate this point. Further, agency is plainly *prior* to objectivity, for *ens in se* is prior to *ens ab extra* (or even *ens pro se*) ; and it must thus also be prior in any "order of creation". But, finally, as to "creation" itself : it may well be a question whether we rightly call the metaphysical derivation of objects out of *nothing objective* by the term "creation" ; but not that the actualization of finite agents by *actio pura* requires no "creation" in the question-begging sense of production out of *nothing at all*, such as is made necessary by failure to subordinate objectivity to finite agency. The actualization of agents is directly interpretable as the essential differentiation of *actio pura* congruent with its absolute infinity, into the infinite hierarchy of finite agents of every grade of perfection. Now, as I have explained, this differentiation of *actio pura infinita* is not a division of agency into *sections* : the distinction of a finite "self" from its complementary "other" is not the rending of an objective *totum*, but an *essential concentration of inseity*. And "selves" must thus be infinite in hierarchical order as *actio pura* is infinite in power. It is thus the inseity of *actio pura infinita* that determines the infinite hierarchical differentiation of finite "selves". And this absolute internal differentiation of the hierarchy of agents within the infinite Agent, equally with the relative external objectification of the agency of finite "selves" and in relation to them, is traceable to one ultimate source : the necessity that lies in *actio qua actio* to act, *i.e.* freedom.

On the subject of the infinite Attributes cf. also my *Aeternitas*, ch. xi.

involved the merging and identity of "self" and "other". For this would only follow if "self" and "other" were objects defined by externality, and not agents defined by activity; and the imperviousness of objects derives from their objectivity rather than from their derived individuality. True individuality is metaphysical ultimacy or being-in-self; and the individuality of the finite agent, at its hierarchical level, is not destroyed but perfected by "community" and co-action with its complementary "other". This is the way of freedom, and of the "return" of the individual finite agent to its eternal "place" in the individual infinite Agent.

Thus I return once more to what I have striven to emphasize again and again: that it is not "otherness" that stands in the way of knowledge, but *externality*; and that it is this that renders our "contemplation of objects", however complete and however carefully verified, not knowledge in the strict sense, not apprehension of the real. However precisely we may grasp the appearance (and thus, in that relation, formally justify the denomination of our apprehension as "knowledge") it can only give us a sort of *opinion*, more or less "well-founded", with respect to the real which thus distortedly manifests itself under the conditions of our finiteness, and under "the categories of our impotence". To apprehend the real *qua* real we must adopt another standpoint and method: as we know ourselves by the "objectless realization" of our agency, so we must achieve knowledge of the "other", whether subordinate, co-ordinate, or super-ordinate in the hierarchy of the real, by that "co-operant enjoyment" that already as finite agents we are never wholly without (else the very existence of an "other" of any order could not be proved, or even made probable, or indeed conceived); that exemplifies itself in our most primitive data, in our apprehension of our tools and instruments, in our direct awareness of the reality of other persons, and reaches its fullest fruition in simple love.

IV.—THE NATURE OF ENTAILMENT.

BY NORMAN MALCOLM.

IN this paper I am going to discuss a problem about the nature of entailment. The expression ' p entails q ' was introduced by Moore to express the converse of *follows from* or *is deducible from*, in the sense of 'follows from' or 'is deducible from' in which the conclusion of a valid syllogism follows or is deducible from the premises, or in which "This is coloured" follows or is deducible from "This is red".¹ I can partially define my use and the prevailing use among philosophers of the word 'entails', by saying that whenever p and q are *contingent* propositions, p entails q if and only if " p and not q " is self-contradictory.²

The problem which I am going to discuss is one closely connected with the puzzle which philosophers feel when they ask whether it is always the case that the consequent of an entailment is 'contained' in the antecedent; or when they ask, as Ewing does, "can I by inference pass with logical necessity from one fact to another different fact, or is the conclusion of any inference . . . always merely part (or all) of the premises restated in different language?"³

Philosophers have expressed different views about this problem. For example, Wittgenstein said, "If p follows from " q ", the sense of " p " is contained in that of " q ".⁴ And he also said, "If p follows from q and q from p then they are one and the same proposition".⁵ On the other hand, Moore has said, ". . . I do not see how we can possibly do justice to the facts

¹ G. E. Moore, *Philosophical Studies*, London, 1922, p. 291.

² I do not try to state a criterion for the use of the phrase ' p entails q ' when it is the case that either p or q is not a *contingent* proposition. The discussion in this paper applies only to entailment between contingent propositions.

³ A. C. Ewing, *A Short Commentary on Kant's Critique of Pure Reason*, London, 1938, p. 20.

⁴ *Tractatus Logico-Philosophicus*, London, 1922, *5. 122.

⁵ *Ibid.*, *5. 141.

without supposing that there are genuinely different propositions and genuinely different facts, which nevertheless mutually entail one another".¹

Here is a case of one philosopher saying that whenever p entails q the 'sense' of ' q ' is 'contained' in the 'sense' of ' p ', and also saying that equivalent facts or propositions are one and the same fact or proposition;² while another philosopher contends that there are genuinely *different* facts or propositions which are equivalent to one another. It is obvious that this dispute is intimately related to the question, "Are there synthetic *a priori* truths?" According to the rough use of the not very clear expressions 'analytic' and 'synthetic', Wittgenstein's view would be said to be the view that all entailment is 'analytic'; while Moore's view would be said to be the view that some entailment is 'synthetic'. I mention its connexion with the synthetic *a priori* puzzle, which I do not attempt to deal with directly in this paper, merely in order to bring out the importance of this dispute.

It will be seen that the dispute as to whether it is always the case that equivalent facts are one and the same fact, is at bottom a disagreement about the application of the phrase 'same meaning'. From the statement that the *fact* that p is a different fact from the fact that q , we naturally pass to the statement that the *proposition* p is different from, not identical with, the proposition q ; and from that we naturally pass to the statement that the *sentence* ' p ' does not mean the same as the sentence ' q '. And this transition may be reversed. We naturally pass from "' p ' and ' q ' do not mean the same", to " p and q are different propositions", and to "the fact that p is a different fact from the fact that q ". Whatever leads us to say that two sentences ' p ' and ' q ' mean the same or do not mean the same, also leads us to say that they express one and the same fact or that they express different facts.

In some cases where a proposition, p , is equivalent to a proposition, q , one person wishes to say that ' p ' and ' q ' do not mean the same, while another person wishes to say that ' p ' and ' q ' do mean the same. They disagree, although they both *understand* the sentences ' p ' and ' q ' perfectly well. Their disagreement is not due, therefore, to the fact that one has certain knowledge which the other does not have. The dis-

¹ "Facts and Propositions," *Aristotelian Society Suppl.* Vol. VII, p. 198. This was a symposium. Ramsey, the other member of it, held, in opposition to Moore, that equivalent facts are one and the same fact.

² We say that p is equivalent to q , if and only if p entails q and q entails p .

agreement between Moore and Wittgenstein was not because one of them knew certain things about equivalent propositions or equivalent facts which the other did not know. Their disagreement was of quite a different nature. In the following discussion we hope to throw light on the source and nature of this disagreement, as well as to help solve the problem at issue.

If the problem as to whether it is always the case that equivalent facts are one and the same fact is at bottom a dispute about the application of the phrase 'mean the same', then, in order to get at the roots of the matter, let us ask ourselves the question, Under what circumstances do we say that two sentences mean the same? Another way to put this question is to ask, What are the *rules* for the use of the expression 'mean the same'? Or again, What are the *criteria* for saying that two given sentences mean the same? Stating the criteria for saying that two sentences mean the same is what we call 'describing the use' of the expression 'mean the same'. By describing the use of this expression we hope to throw light on our problem about the nature of entailment. This we proceed to do.

There is a tendency to say that two sentences do *not* mean the same if one of them contains an expression which is not synonymous with any expression or expressions contained in the other. An example of this tendency is the following: The authors of *Symbolic Logic* call attention to the fact that "This table is brown" entails, and is entailed by, "If anyone were to judge this table to be brown he would be judging truly". They then go on to remark, "But it must not be supposed that, since they (the above propositions) are equivalent and thus would under any conceivable circumstances be true together or false together, they are really one and the same proposition expressed in different words. That we have here two genuinely distinct propositions which are nevertheless logically equivalent, can be seen from the fact that one of them involves the concept of a person, the concept of judging, and the concept of being true, while the other does not."¹ One sentence contains the expressions 'anyone' and 'judging truly', while the other sentence contains no expressions which mean the same as these. This leads to its being said that the two sentences do not mean the same, and so express *different* propositions.

Moore has pointed out² certain grounds for the undoubted inclination to say that the sentences, 'If anyone were to believe that this table is brown he would be right' and 'This table is

¹ C. I. Lewis and C. H. Langford, *Symbolic Logic*, New York, 1932, p. 336.

² In discussion.

brown', do not mean the same. These grounds can be stated as follows: "In order to understand the first sentence one must understand the word 'believe', while this is not the case in understanding the second sentence. Understanding the one is different from understanding the other, and so the sentences do not mean the same, and so express different propositions. Furthermore, the first statement is 'about belief',¹ while the second one is not 'about belief'. Therefore the two statements do not mean the same, and so express different propositions." We can see how natural it is to say these things and how natural is the inclination to say, on these grounds, that the sentences do not mean the same, although they express propositions which are equivalent. This shows that an ordinary criterion for saying that S and S_1 do not mean the same is the fact that S contains expressions for which there are no synonymous expressions in S_1 .

When a person is asked whether two given sentences mean the same, he may reply that he does not 'think of the same things' when he uses the one sentence as when he uses the other. And on this ground he will say that the two sentences do not mean the same. Russell proposed an analysis of numerical statements according to which the sentence, 'There are only two apples on the table', would be translated something like this: 'There exist an x and a y , such that x is not identical with y , and such that x is an apple on the table and y is an apple on the table, and anything z is either identical with x or identical with y '. We can easily imagine that if an ordinary person were asked whether these two sentences mean the same, he would reply: "They can't mean the same. I don't have anything as complicated as that in my head when I say a simple little thing like 'There are only two apples on the table'. I am not thinking of all those other things about their not being identical and so on." On the same ground we can feel some inclination to say that ' x is a brother' does not mean the same as ' x is male and there exists a y , such that y is a child of the parents of x '. One could say that the two expressions have a different 'feel'.

Kant is sometimes criticised² for having employed a 'psychological criterion' for deciding whether a proposition is 'synthetic'.³ But, in the first place, since Kant was introducing

¹ Moore's phrase.

² E.g., by A. J. Ayer, *Language, Truth and Logic*, London, 1938, pp. 100-103.

³ *Critique of Pure Reason*, translated by N. K. Smith, first edition, pp. 52-53.

the expression 'synthetic judgment' into philosophical language, he was entitled to give whatever criteria for its use he chose to give. And, in the second place, since Kant was partly concerned in asking, for example, whether ' $5 + 7$ ' means the same as ' 12 ', he was quite right in asking whether when we use the one expression we 'have the same thing in our mind' as when we use the other; since this is one of the *usual* criteria for saying that two expressions mean the same.

So far we have mentioned two criteria for the use of 'mean the same'. Let us name a third. If we can know or assert a proposition, *p*, without knowing or asserting another proposition, *q*, then we are inclined to say that '*p*' and '*q*' do *not* mean the same. It is possible to think of cases of entailment and equivalence in which one could know or assert the antecedent without knowing or asserting the consequent. For example, it is possible that someone should know or assert that "This table is brown" and yet neither know nor assert that "If anyone were to believe that this table is brown he would be right". The reason for saying this is simply the fact that a person might understand the sentence, 'This table is brown', and yet *not* understand the word 'believe' or any synonymous word. But if he did not understand the word 'believe' or any synonymous word, then, one is inclined to say, it would be impossible for him to know or to assert the proposition, "If anyone were to believe that this table is brown he would be right". This would not prevent him from knowing or asserting the equivalent proposition, "This table is brown". And so one is tempted to say, as Moore was, that these two sentences expressing equivalent propositions do not mean the same, and, therefore, express *different* propositions.

It is possible to provide other cases of entailment with respect to which it is true that a person could know or assert the antecedent without knowing or asserting the consequent. Take, for example, the entailment, "If the couch is purple all over then it is not green". A person could know or assert the antecedent of the entailment without knowing or asserting the consequent. The circumstances in which this could happen would be circumstances in which the person understood the sentence, 'The couch is purple all over', but did *not* understand the word 'green' or any synonymous word. Suppose that this person had seen many purple things and had been taught the use of 'purple', but had never seen anything green and had not been taught the use of 'green' or of any synonymous word. He would not understand the sentence, 'The couch is not green'.

Therefore, he could neither know nor assert the proposition which it expresses. We can see that it would be natural to say that since you could understand 'The couch is purple all over' and yet *not* understand 'The couch is not green', therefore the meaning of the second sentence is not 'contained' in the meaning of the first sentence. In this way one could be led to disagree with Wittgenstein's statement, "If p follows from q then the sense of ' p ' is contained in the sense of ' q '".

So far we have listed three criteria for the use of 'mean the same': (1) Two sentences do not mean the same if one of them contains an expression which is not synonymous with any expression or expressions in the other sentence; (2) two sentences do not mean the same if a person does not 'think of the same things' when he uses one as when he uses the other; (3) two sentences do not mean the same if a person could know or assert the proposition expressed by the one without knowing or asserting the proposition expressed by the other.

All three of these criteria lead in the same direction. They lead one to say that in some cases where p entails q , the meaning of ' q ' is not 'contained' in the meaning of ' p '. They also lead one to say that in some cases where p and q are equivalent, ' p ' and ' q ' do not mean the same. From saying that ' p ' and ' q ' do not mean the same we pass naturally to the statement that p and q are different propositions, and thence to the statement that the fact that p and the fact that q are different facts. Thus the use of these criteria for 'mean the same' inclines people to say, as Moore did, that genuinely different facts may be connected by a necessary connexion. This might be called the view that necessary connexion is in some cases 'synthetic'. One may be led to adopt this philosophical view simply by following some of our ordinary criteria for the use of the expression 'mean the same'.

There is another important criterion for the use of the expression 'mean the same'. We are strongly disposed to say that two statements mean the same if they have the same *verification*. If with regard to two propositions, p and q , there is no possible way of verifying p without also verifying q , and no possible way of verifying q without also verifying p , then we are inclined to say that ' p ' and ' q ' mean the same. Equivalent propositions have the same verification. Any grounds which establish the truth of one of a pair of equivalent propositions, thereby establish the truth of the other, since the truth of one *follows from* the truth of the other. This criterion leads us in an opposite direction from the other criteria. For, since

it inclines us to say that sentences expressing equivalent propositions mean the same, it also leads us to say that they express one and the same proposition, and this leads us to say that they express one and the same fact. Thus the verification criterion for the use of 'mean the same' leads to the view that it is always the case that equivalent facts are one and the same fact. And since whenever p entails q , there is no verification of p which is not also a verification of q , following this criterion leads one to say that whenever p entails q the meaning of ' q ' is 'contained' in the meaning of ' p '.

There is, we might say, a *collision* between the verification criterion and the other criteria for the use of 'mean the same'. The former leads philosophers to adopt a view which might be called the view that all entailment is 'analytic'. The latter leads philosophers to adopt the view that entailment in some cases is 'synthetic'.

We are ready now to see the nature of the disagreement between the philosophers, one of whom says that equivalent facts are one and the same fact, the other of whom says that genuinely different facts may be equivalent. We can imagine that two persons, A and B, should dispute as to whether the two sentences, 'This table is brown' and 'If anyone were to believe that this table is brown he would be right', mean the same. Let us suppose that both A and B know the English language and that they both understand the two sentences equally well. They are both acquainted with the various features of the two sentences. They both see and agree that one sentence contains expressions for which there are no synonymous expressions in the other sentence; that the sentences have a different 'feel'; that under certain circumstances one could understand the one without understanding the other; that the propositions they express have the same verification.

They recognise equally well the various features of these sentences, yet A says they mean the same, B says they do not. What is the nature of their disagreement? I wish to suggest that what makes them disagree is that they are, consciously or unconsciously, concentrating on different criteria for the use of 'mean the same'. A insists on regulating his use of the expression 'mean the same' by one criterion or set of criteria, B insists on regulating his use of this expression by a different criterion or set of criteria. They disagree, therefore, because of a difference in the way they use the expression 'mean the same', and not because one of them knows something about the sentences and their meanings which the other does not know.

This 'verbal' difference between them may lead one of them to say that since these sentences do not mean the same, they express different facts. And thus the view arises that genuinely different facts may be equivalent.

This throws light on our previous remark that the disagreement between Wittgenstein and Moore was not due to one of them having certain knowledge about equivalent sentences or propositions which the other did not have. They disagreed because they employed different criteria for the use of the expression 'mean the same'.

Although the difference between the philosopher who says that equivalent facts are one and the same fact, and the philosopher who says that there are genuinely different facts which are equivalent, is at bottom a *verbal* difference, in the sense described, yet one of these ways of talking is enormously preferable to the other. The way of talking according to which it is said that genuinely different facts may be related by mutual entailment misrepresents the nature of entailment and leads to philosophical perplexity.

When it is said that *two* genuinely *different* facts are equivalent, then one feels that entailment or necessary connexion is a *mystifying* thing. How can two different facts be necessarily connected? How is it possible that one should be able to pass by logical inference, directly from the knowledge of one fact to the knowledge of an entirely different fact? These are the sort of questions which the statement that there are equivalent facts which are not identical naturally arouses. When it is said that the equivalent facts are genuinely *different* facts, then one tends to have the idea that there is a *gap* between them. There is a gap between them and yet they are necessarily connected. One has the idea that a remarkable and mysterious feat of the intellect is required to bridge this gap, and to infer the one fact from the other with logical necessity. One calls this feat 'intuition' or 'synthetic *a priori* inference'.

One way to throw light on this puzzle and to get rid of misleading ideas about the nature of entailment is to see that whenever *p* entails *q*, the fact that *q* is not a further fact in addition to the fact that *p*. Let us first say something about the phrase 'a further fact in addition to'. The phrase, '*x* is a further fact in addition to *y*', is *not* equivalent to '*x* is a different fact from *y*'. It could be said that whenever *p* entails *q* and *q* does not entail *p*, the fact that *p* and the fact that *q* are *different* facts. For example, "John owns a mare" entails "John owns a horse". We could say that the fact that John owns a mare

is a different fact from the fact that John owns a horse, on the ground that if you have told someone that John has a horse, you can tell him something further, something in addition, by telling him that John's horse is a mare. And since we use 'different' symmetrically, if we say that x is a different fact from y we also say that y is a different fact from x . Thus it would be quite natural to say that "John owns a horse" is a different fact from "John owns a mare". The same thing applies to every case of entailment which is not a case of equivalence.¹

So instead of asking whether it is ever the case that when p entails q , the fact that q is a different fact from the fact that p , let us ask whether the fact that q is a further fact in addition to the fact that p ? But as soon as we ask this question the answer to it is plain. It is clear that the fact that John owns a horse is not a further fact in addition to the fact that John owns a mare. It is clear that the fact that the couch is not green is not a further and additional fact about the couch, over and above the fact that the couch is purple. It is clear that beyond the fact that there are 7 cows and 5 horses in the pasture, there is not a further and additional fact, which is the fact that there are 12 animals in the pasture. We should say that this is a further and additional fact only if we meant that altogether there are 24 animals in the pasture. With regard to no matter what case of entailment we raise this question the answer is always the same.

If you were to create a certain state of affairs you would by the same act create every state of affairs which is entailed by it. No additional act of yours would be required to produce that which follows from it. If a person makes a brown table he produces by the same act the state of affairs expressed by the sentence, 'If anyone were to believe that this table is brown he would be believing truly'.

That fact A is a further fact in addition to fact B is a sufficient condition for saying that B does not entail A. If we define the expression, 'fact A is contained in fact B' to mean 'fact A is not a further fact in addition to fact B', then we shall say

¹ Ewing says that the question of whether there is "synthetic *a priori* inference", which he regards as "one of the most important in the whole of philosophy", is the question of whether one can "by inference pass with logical necessity from one fact to another, different fact . . ." (*op. cit.*, p. 20). But if we agree to say that whenever p entails q but q does not entail p , the fact that q and the fact that p are different facts, then it is obvious that one fact may entail a different fact, and it is scarcely one of the most important questions in the whole of philosophy.

that whenever one fact entails another fact, the fact entailed is *contained* in the fact which entails it.

We noticed previously that it is possible for one to arrive at the statement that "There are genuinely different facts which nevertheless mutually entail one another"¹ by the process of regulating one's use of the expression 'mean the same' by only a *part* of all the criteria which normally regulate the use of that expression. This leads one to say in the case of certain sentences which express equivalent propositions, that these sentences do not mean the same. If one ties the expression 'express different facts' to the expression 'do not mean the same', then one is led to say that these sentences express *different* facts.

On the other hand, if a person regulates his use of 'mean the same' by the verification criterion only, he arrives at the opposite conclusion—namely, that all sentences expressing equivalent propositions mean the same, and so express the *same* fact.

If a person tries to regulate his use of 'mean the same' by *all* of the ordinary criteria for its use, cases will frequently arise in which he will not know *what* to say. That is, there will be cases of sentences which express equivalent facts and with respect to which he will not know whether to say that they mean the same or do not mean the same. He will hesitate even though he *understands* the sentences perfectly. His hesitation will not be due to ignorance, but due to the fact that in such cases there is a *conflict* between the criteria for the use of 'mean the same'. In such cases there is *no correct answer* to the question: Do these sentences which express equivalent propositions, mean the same?

If a person's use of 'different fact' is such that he says that S and S₁ express different facts, if and only if he says that S and S₁ do not mean the same, then it follows from what was just said, that cases will frequently arise in which there is no correct answer to the question: Do S and S₁ express different facts?

We propose to use the expression 'different fact' in a different way. We propose to use it in such a way that its use will not be regulated by the use of the expression 'mean the same', but by the use of the expression 'a further fact in addition to'. We shall define the expression 'different fact' in the following way: We say that A and B are different facts, if and only if either A is a further fact in addition to B or B is a further fact in addition to A. And we say that A and B are the *same* fact,

¹ Moore, *Aristotelian Society Suppl.* Vol. VII, p. 198.

if and only if A is not a further fact in addition to B and B is not a further fact in addition to A.

We have already seen that whenever *p* entails *q*, the fact that *q* is not a further fact in addition to the fact that *p*. From this, together with the above definition, it follows that whenever *p* and *q* are *equivalent*, the fact that *p* and the fact that *q* are one and the same fact.¹

According to this quite natural use of 'different fact' it is *not* the case that there are genuinely different facts which are equivalent. It is not the case, for example, that the fact that elephants are larger than mice is a different fact from the fact that mice are smaller than elephants. There are not two separate facts, divided by a gap but connected by a mysterious connexion. There is just one fact which these two different sentences equally express. There is just the one simple fact which you can find out by comparing an elephant with a mouse. There is not one process of finding out that elephants are larger than mice, and *another* process of finding out the *different* fact that mice are smaller than elephants. If this were the case it would be sensible to ask, "Which did you find out *first*? —that elephants are larger than mice or that mice are smaller than elephants?" But this is a senseless question. It is a senseless question because there are not *two* facts.

We wish now to further recommend this use of 'different fact' by showing that the criteria for 'mean the same', which lead to its being said that there are genuinely different facts which are equivalent, are *untrustworthy*. They are untrustworthy because in the case of certain pairs of sentences, these criteria incline us to say that the sentences do not mean the same and, therefore, to say that they express different facts—whereas it is overwhelmingly plain that these sentences do *not* express different facts.

Let us consider the first two criteria which we stated: (1) *S* and *S*₁ do not mean the same if one of them contains expressions for which there are no synonymous expressions in the other; (2) *S* and *S*₁ do not mean the same if one has a different 'feel' from the other, if when a person uses *S* he does not 'think of the same things' as when he uses *S*₁.

Compare the following pairs of sentences: 'To-day is Monday' and 'It is true that to-day is Monday'; 'All the eggs have spoiled' and 'At least one egg has spoiled and none of the eggs

¹ We should not be misled by a verbal difficulty. It is nonsense to say that two facts are one fact. It is not nonsense to say that the fact that *p* and the fact that *q* are one and the same fact.

have not spoiled'; 'There are only two apples on the table' and 'There exists an x and a y , such that x and y are not identical, and such that x is an apple on the table and y is an apple on the table, and any z which is an apple on the table is either identical with x or identical with y '.

One of the sentences in each pair contains expressions for which there are no synonymous expressions in the other. And in using the one sentence a person may 'think of different things' from what he 'thinks of' in using the other. This is especially true of the third pair. The second sentence of this pair has quite a different 'feel'. These considerations may incline one to say that the sentences of each pair do not mean the same. But it is perfectly obvious that with each pair of sentences there do not go two different facts, connected by a mysterious connexion. With each pair of sentences there goes just one fact which both sentences express. There are *two* sentences and *one* fact.

Compare the following pair of sentences: 'The average man is 5 feet, 8 inches tall' and 'If the heights of all men were measured, and the figures for the individual heights added together, and if the sum obtained were divided by the number of men measured, the result would be the figure 5 feet, 8 inches'. On the basis of the two criteria in question one would be led to say that these sentences do not mean the same. But it is perfectly obvious that they express only *one* fact. It is perfectly obvious that the fact about the average man *is* just the complicated fact about individual men. If the criteria in question incline us to say that the sentences in the preceding pairs do not mean the same and so express different facts, then clearly they are not safe criteria by which to judge whether the sentences of other pairs express different facts.

Let us consider now the sort of example of equivalence which has led Moore and others¹ to say that there are "genuinely different facts" or "genuinely distinct propositions" which nevertheless mutually entail one another. Let us consider the pair of sentences, 'This table is brown' and 'If anyone were to believe that this table is brown he would be right'. (Or: 'If anyone were to judge that this table is brown he would be judging truly'.) The same considerations operate here which would lead one to say that the sentences in the preceding example do not mean the same.

But just as we can see that it is absurd to say that the fact that the average man is 5 feet, 8 inches tall is a fact over and

¹ E.g., Lewis and Langford, *Symbolic Logic*, p. 336.

above the fact about the results of measuring individual men, so we can see that it is absurd to say that the fact that the table is brown is a fact over and above the fact that if anyone were to believe that the table is brown he would be right.

There is a great inclination to say, on the basis of these criteria in question, that the sentence, 'England is at war with Germany' does not mean the same as the sentence, 'The leader of the English issued a statement to the effect that the English would fight the Germans; German sailors fire torpedoes at English ships and sink them; German soldiers fly in airplanes over the property of Englishmen and drop bombs, and English soldiers do the same thing over territory of Germans; both Englishmen and Germans are busy making shells to fire at one another, and so on'.¹ But is it not obvious that the two sentences do not state different facts—that there is not a fact about the *nations* over and above the facts about German and English individuals²—that there are not two, separate facts, inexplicably connected, but that there is *one* fact differently expressed?

One can follow the two criteria for the use of 'mean the same', which we are discussing, and say that the sentences in the pairs do not mean the same. There is no harm in this so long as one does not go on to say that they express different facts, and then become puzzled as to how it is possible that genuinely distinct facts should be necessarily connected, or come to think that entailment must be a rather wonderful relation in order for this to be the case.

Let us briefly consider the third of the criteria for the use of 'mean the same' which we stated, *i.e.*, '*p*' and '*q*' do not mean the same if one could know or assert *p* without knowing or asserting *q*. We described circumstances in which it would be possible for a person to know that "The couch is purple" and *not* know that "The couch is not green", or to know that "This table is brown" and *not* to know that "If anyone were to believe that this table is brown he would be right". The circumstances we described were those in which the person did not *understand* the second of each pair of sentences, because in the one case he did not understand the word 'green' or any synonymous word, in the other case he did not understand the word 'believe' or any synonymous word.

¹ The second statement does not *entail* the nation-statement. But it suggests the kind of statement which could be given and which would entail the nation-statement. The example comes from Wisdom.

² Apparently it is not obvious to everyone, for people have said that nations are non-sensible entities, super-individuals.

The fact that there are cases in which p entails q and yet one could know p without knowing q , naturally inclines one to say that in such cases q is not 'contained' in p and to imagine that entailment in such cases is a rather remarkable relation. But let us remember that the circumstances are no more and no less than were described. To say that there could be a case in which one knew that the couch was purple but did not know that it was not green, is *simply* to say that there could be a case in which one knew that the couch was purple and yet did not understand the word 'green'. Likewise, to say that one could know that the table is brown without knowing that if anyone were to believe that the table is brown he would be right, is to say *no more* than that one could know that the table is brown and yet not understand the word 'believe'.

A person can use the simple fact that a man might know that the table is brown and yet not understand the word 'believe', as a criterion for saying that the fact that the table is brown and the fact that if anyone knew the table is brown he would be right, are genuinely different facts. But if he does this, his statement that they are genuinely different facts means no more than the *criterion* he has given for saying it. His statement that they are genuinely different facts means no more than the obvious and unexciting fact that a person could know that the table is brown and yet not understand the word 'believe'.

Although his statement has this innocuous content, yet it promotes misunderstanding because it gives rise to a misleading idea about the nature of entailment or necessary connexion. It gives rise to the idea that entailment is a miraculous relation which, in some strange way, binds together separate and divisible facts. And it gives rise to an uneasy wondering as to how this is possible.

In order to see that the statement that they are genuinely different facts is misleading let us note the following consideration: If A and B are two distinct facts then there should be a process of learning that A is a fact which is different from the process of learning that B is a fact. Even if A and B entail one another there should be a process of learning that A is a fact and then *inferring* B from A, and likewise of learning that B is a fact and then inferring A from B. It should make sense to ask, "Did you learn A first and then infer B, or was it the other way round?"

But it clearly does *not* make sense to ask, "Which did you learn *first*, that the table is brown, or that if anyone believed that the table is brown he would be right?" This is a question

without sense, just as is the question, "Which did you learn first, that elephants are larger than mice, or that mice are smaller than elephants?" It is a question without sense because there are not *two* processes of learning. And there are not two processes of learning because there are not two facts. There is just the *one* fact, expressed by *two* sentences, which is a fact about the colour of the table and which you learn by looking at the table. With regard to whatever equivalent facts you ask the above question, it will be found to be without sense.

The purpose of this paper has been to deal with a problem about the nature of entailment—namely, the problem of whether there are genuinely different facts which are equivalent. The reason this problem exists is that there are several, divergent criteria for the use of the expression 'mean the same', which in some cases conflict. Instead of asking, therefore, whether sentences which express equivalent propositions *mean the same*, we tried a different procedure. We pointed out that whenever a fact A entails a fact B, B is not a further fact in addition to fact A. We defined the expression, 'A and B are one and the same fact', to mean 'A is not a further fact in addition to B, and B is not a further fact in addition to A'. We were able to point out, therefore, that in this sense of 'one and the same fact', it is always the case that equivalent facts are one and the same fact. We then tried to discredit the criteria for the use of 'mean the same' which lead to the opposite conclusion, by showing that in the case of certain sentences these criteria tempt us to say that these sentences do not mean the same, and therefore to say that they express different facts, when everybody would agree that the sentences in question do *not* express different facts. Since they tempt us to say this in cases about which there is *no* doubt, they are not safe criteria to follow in cases where there *is* doubt. If we do not follow these unsafe criteria for the use of 'mean the same', then there will be no temptation to say that there are genuinely different facts which are equivalent.¹

¹ This paper is based very largely on things which John Wisdom has pointed out to me.

V.—NEW BOOKS.

The Heritage of Kant. Edited by G. T. WHITNEY and D. F. BOWERS. Princeton University Press; London, H. Milford, 1939. Pp. x, 426. \$4.50.

THIS work was completed by Prof. Bowers after the death of the first-named editor, who originated and carried out the larger part of the scheme, and it is desired that the volume should be regarded as a tribute to Prof. Whitney's memory. The editors and contributors may be warmly congratulated on the collection of essays, every one of which is, in my opinion, worth perusal. They combine exegesis and criticism in a very profitable way, the plan of most of the essays being to pick out those portions of Kant's thought on a given topic which seem to the contributor of greatest importance, and evaluate them, showing how far they escape and how far they are liable to objection. The essays cover most of the chief aspects of Kant's thought, but there has been no attempt at a detailed scheme of collaboration. Owing to the great variety of the topics covered it is a very difficult work to review, and without taking an inordinate space I can do nothing more than give a slight idea of the contents of the different articles.

The only two essays which deal primarily with the general basis of the *Critique of Pure Reason* are "The Transcendental Method" by Ledger Wood and "The Doctrine of Objectivity in Locke, Hume, and Kant" by S. M. Thompson. The former begins by suggesting that Kant was perhaps the first modern philosopher to claim to put forward a distinctively philosophical method not just borrowed and adapted from the special sciences, but the claim is rejected. Kant's method rests on an analysis of experience, but, while this analysis is highly valuable as such, it can only discover that our experience has in fact a certain form, and not that all experience must have that form, which is something that could not be established without falling back on the dogmatism that Kant rejects. Further, Kant's conclusions are not, as he claimed, strictly proved, but are of the nature of more or less probable explanatory hypotheses. (Though this is no doubt true, the author seems to jump from the premiss that they are at best probable explanatory hypotheses to the conclusion that they are so in the same sense as the conclusions of natural science and are therefore stabilised, if at all, only by the same general kind of method—a complete *non sequitur*.) The author contends further that Kant's theory of the *a priori* and his idealism can be separated. All that Kant has shown is the all-pervasiveness of the categories, not their necessity, and this is as compatible with realism as with idealism. While the main contentions of this article are hardly original, they are put in a fresh and rather striking form. The article by S. M. Thompson argues that, while Kant has established that "experience involves an *a priori* conceptual form that gives to it both unity and objective reference" so that "whatever the categories may be, they must

satisfy this fundamental condition", he fails to guarantee the truth of the more specific postulates on which he conceives natural science to be based.

F. S. C. Northrop, in "Natural Science and the Critical Philosophy of Kant" gives a very interesting historical account of the development of Kant's thought on various points connected with physical science. It is incidentally very surprising to hear from an expert in the philosophy of science that "incredible as it may seem, contemporary realistic physicists, notwithstanding their impressive logical and empirical arguments for the relational theory of space and time, have yet to give an adequate account of the equally evident empirical facts (*i.e.*, rotational motion and incongruent counterparts) which Newton and Kant designated as rendering the relational theory untenable" (p. 58). Having said this, he adds that Kant's main point concerning space is not connected with its being absolute but rather with the demonstration that it cannot be explained merely as an abstraction from the senses, and that this holds even if we admit that space is relative. The article on "Time and Possibility in Kant" by N. P. Stallknecht suggests a very interesting modification in Kant's philosophy which was never entertained by Kant himself but seems required to make his philosophy really intelligible. The suggested modification consists in the introduction of a distinction between time as contemplated *quâ* scientific object and the subjective or "enjoyed" time of the percipient. The former is the time of the Aesthetic, but the latter is required as the time in which the synthesis of the Analytic is effected. The former is the time of determinism, the latter the time of freedom, and it was because he forgot the latter aspect of time that Kant was led to seek freedom in a timeless self. Again it is the latter time which is essential to the sense of the present and to the idea of possibility. The latter time is the only time in which there is real change. The distinction is recommended as avoiding the well-known difficulties involved in Kant's view that time, and therefore the self as perceived in time, is only appearance, and "making possible a *rapprochement* between the philosophy of Kant's "Critique of Judgment" and certain theories prominent upon our contemporary scene". It is not claimed that Kant himself entertained such a distinction, but I think the author is right in holding it a very promising line of approach if one considers the question of how far we can retain the advantages while avoiding the disadvantages of Kant's philosophy. The next essay, "Kant's Concept of Reality," by R. Scoon, criticises Kant for his ambiguity in the use of the term "reality" as (*a*) a phenomenal category defined in terms of sensation, (*b*) that which characterises the ultimate non-phenomenal world of things-in-themselves. There are interesting points raised, but the author is hardly right in speaking as if the use of the term in the second sense were fairly general in Kant, still less in saying that "as the main outlines of Kant's epistemology take shape, reality more and more becomes a kind of supreme and ultimate philosophical category" (p. 134), though it is no doubt implied by Kant that things-in-themselves are real while phenomena are not. D. F. Bowers, in "Kant's Criticism of Metaphysics," seeks to show that Kant's attempt to disprove the possibility of metaphysics is unsuccessful. In discussing Kant he also has in view the positivists of the present day whom he likewise criticises. W. H. Sheldon, in "Some Bad Results of Kant's Thought," contends that Kant's negative attitude to metaphysics results from too narrow a view of knowledge. The most serious indictment of Kant's influence is, he says, that "the attitude of pure theory quite divorced from practice was bound to make of philosophy a speculative game, and even a game in which the

participants, having no external umpire, came to disagree about the rules, and eventually to find thought itself involved in contradictions" (p. 179). But like so many others who take this line, the author leaves it somewhat vague how the taking notice of the relation of thought to practice is to help us specifically.

The essays dealing with parts of Kant's philosophy not covered by the *Critique of Pure Reason* are in general more difficult to summarise because of the number of points they cover. D. W. Gottschalk, in "Kant's Postulated Practical Freedom," discusses Kant's ethics and its relation to the problem of freedom, with special reference to the question whether a man can have duties which he cannot perform. He thinks the difficulty can only be met by a development of the conception of love or "grace" as used in Christian theology, for "love is a heteronomous influence that does no prejudice to our moral autonomy" (p. 223). W. T. Jones, in "Purpose, Nature and the Moral Law," contends that the concept of purposiveness of the "Critique of Judgement" serves to mediate between the ethical and the theoretical sides of Kant's philosophy because the very "characteristic of morally good action, in virtue of which it is called free, is precisely the same as that special relation of parts to whole which exists in an organism and in virtue of which we call it purposive", so that that spontaneity which, according to morality, only ought to exist, is now seen to be actually realised in nature, "though not in its supersensuous form, thus indicating the possibility, though of course not of itself providing the existence of such spontaneity in moral action" (pp. 240-241). The article contains interesting views about the sense in which the concept of purposiveness as applied to physical nature is regarded by Kant as regulative. "In the first sense, in which it applies to nature as a whole, it is genuinely subjective, since it is a merely methodological assumption which involves no assertion about the actual constitution of things. In the second sense it is no more and no less subjective than are the categories of the understanding. It is constitutive of experience, as they are, but it is limited to the constitution of organisms and is therefore not constitutive of experience as a whole. Kant's whole exposition is seriously confused by the fact that he does not clearly distinguish these two senses. He rightly regards them both as uses of the reflective judgement, but he does not see that it is only in the first sense that the reflective judgement is regulative" (pp. 231-232).

The two articles on Kant's political philosophy and jurisprudence, "An Exposition of Kant's Philosophy of Law," by P. M. Kretschmann, and "A Critique of Kant's Philosophy of Law" by M. R. Cohen provide interesting summaries of Kant's main views. While the former consists rather of exegesis and the latter of criticism, they both show that Kant in his published views on this subject sometimes fell sadly short of his own principle that humanity must always be treated as an end-in-itself, in its full implications. "Kant and Modern Sociology" by W. M. Urban, contends that the conception of value plays the supreme part not only in Kant's ethics, but in his theoretical philosophy, but does not in my opinion provide adequate support for his contentions.

There are three very interesting articles on Kant's aesthetics. "A Re-assessment of Kant's Aesthetic Theory" by T. M. Greene, pays special attention to the issue between "classicism" and "romanticism" in relation to Kant's theories. B. Dunham in his essay on "Kant's Theory of Aesthetic Form" tries to explain why Kant laid the stress he did on form in aesthetics, and defends the aesthetic character of colour. He admits

that a single simple colour in itself is perhaps never beautiful but only pleasing, but this, he thinks, is not because it is colour as opposed to form, but because it is solitary, taken in abstraction from any background. But he thinks that Kant's doctrine of form "represented only one phase and that the narrowest of his whole thinking" upon the subject of aesthetics. "Kant's Theory of the Sublime," by R. W. Bretall, after giving a short historical account of the concept of the sublime, turns to answer the question in what sense judgements on the sublime were held by Kant to be universal. The book concludes with an essay on "Kant and Religion" by A. H. Dakin. The author's main contention is that Kant was wrong in his conception of the leading ideas of religion as merely regulative.

A. C. EWING.

New Ways in Psycho-Analysis. By KAREN HORNEY, M.D. London: Kegan Paul, 1939. Pp. 313. 12s. 6d.

IN this book an analyst who has consistently applied Freud's theories for over fifteen years criticises them with respect but without fear. An immense amount of ground is covered, some important points are raised, the work is sketchy, hardly any cases are described. There are chapters on the fundamentals of psycho-analysis, some general premisses of Freud's thinking, the libido theory, the oedipus complex, narcissism, feminine psychology, the death instinct, the relative importance of childhood and contemporary "repetitions" of reaction patterns, the concept of transference, the relative importance of cultural and childhood influences upon neuroses, the "ego," the "id", anxiety, the "super-ego", neurotic guilt, masochism and, finally, a chapter on therapy in the light of what has been said in the other chapters.

The first sentence of the introduction, "My desire to make a critical re-evaluation of psycho-analytical theories had its origin in dissatisfaction with therapeutic results," raises the hope that psycho-analytic theories are to be put in terms of "what happens when . . .". *When a patient complains of this or that then if you talk to him this way or let him talk to you that way then soon he will complain no more*—theories of such a form one would know how to set about testing; it would be a matter of talking, looking, and listening. Theories of such a form are very different from such theories as "Everyone has an oedipus complex" (p. 79); "all bodily cravings are sexual" (p. 50); "Masochism in women is due to penis envy" (p. 112). The latter theories give rise to disputes which are exasperating in a way which reminds one of philosophical disputes. They have the same unsettlableness. We can agree about how people react to difficulties and about how they react to treatment, and still differ as to what lies behind these reaction patterns. The issue here is not what lies behind behaviour but what lies behind people's conscious thoughts and feelings. Does anything? And what does our knowledge of the reaction patterns tell us about the nature of what lies behind them? One hopes that Dr. Horney is going to deal with such points. She does. On page 35 there are general remarks on how "observations on the content and sequence of the patients' expressions, together with general observations of his behaviour" enable us to "draw inferences as to the underlying processes". In this connexion see also pages 18 to 20 on the meaning of unconscious motivation. On pages 51, 52 the evidence for the libido theory is considered. On page 105 it is claimed that the data for the theory that

women are psychically determined by a wish for attributes of the other sex are scant, and on the pages that follow this claim is supported.

Thus Dr. Horney touches on the sort of points her opening sentence leads one to hope she will treat of. But the work is sketchy. I can give here only one example of what I refer to. On page 52 a discussion of "the evidence for the libido concept" is summed up by saying that it "consists of unwarranted analogies and generalisations". But nothing is done to explain what, if it could be obtained, would be good evidence for such a theory, and one feels uneasy because on the one hand Dr. Horney's criticisms of the theory have seemed good, while yet on the other hand one feels they would run off the backs of those who hold the libido theory like water off a duck's. One begins to doubt whether Dr. Horney and those who hold the theories she criticises have the same ideas, not merely about what evidence is in fact available, but about what would be evidence if it were available. It is my belief that in this way analysts waste a great deal of time and energy. They do not understand the nature of the theoretical questions they ask. They do not understand how little they are questions about what would happen if this or that were tried, and how much they are suggestions for describing in one way rather than another phenomena which are generally admitted to occur, if not always properly recognised. Thus the "conclusion" that every thirst for knowledge is a "desexualised" form of sexual curiosity is not an unwarranted generalisation but either an inexcusable linguistic eccentricity or a fruitful linguistic modification. Analysts should be the first to recognise that it does not follow from the verbalism of the disputes that they are unimportant. For analysts have experience of word-magic, and it must be remembered (1) that the line between the case where a dispute reflects no difference in expectation as to the results of trying this or that and the case where it does is not sharp, and (2) that even when a dispute reflects no such difference of expectation, one notation will put one idea for further investigation into one's head while another will put another. The one "descriptive hypothesis"¹ may be fruitful, the other not.

The practical importance of understanding the nature of a dispute becomes apparent when one realises that to understand its nature is to gain a grasp of what counts in deciding it. As I have said, Dr. Horney says nothing about the fact that what others count in favour of certain theories she doesn't count or weighs very differently.

Nor is Dr. Horney's work redeemed from sketchiness by a good supply of cases. Had there been plenty of these, and had she explained what bearing she thought them to have on the theories in dispute this would have been substantial in itself and would further have helped to show, without saying, how she thinks facts bear on psycho-analytic theories. Cases, too, are needed to support Dr. Horney's own important theories. For example, cases would have enlivened, illuminated, and given more weight to chapters viii and x on the relative importance of childhood and other factors in causing neuroses.

I have dwelt on the sketchiness of this book. But it is a book worth reading because of the interest of Dr. Horney's own theories, and because of her power to look afresh at what is done and what should be done by the mind-doctor. See, for example, her remarks on the statement that value judgements are beyond the scope of the analyst (pp. 179-180, 296), on the guiding of analysis (p. 286), on genuine motives (pp. 186-188),

¹ See Prof. Stebbing's *Logic*, pp. 317-9.

where she says that a more or less conscious belief that I feel like this 'only because' of, for example, a childhood incident, "may easily jeopardise the spontaneity and the depth of emotional experience".

JOHN WISDOM.

Theory of Valuation. By JOHN DEWEY. (Vol. II, No. 4 of the International Encyclopedia of Unified Science); U.S.A., University of Chicago Press; Great Britain and Ireland, Cambridge University Press, 1939; pp. vii, 67; 5s. net.

THIS brochure is Prof. Dewey's contribution to the section of the International Encyclopedia that deals with the *Foundations of the Unity of Science*. His aim is twofold: to secure for values an objective basis on strictly empirical grounds, and to bridge the gulf between the world of facts and the realm of values by extending the methods of the natural sciences to human valuations. The alleged severance "will disappear from human beliefs only as valuation phenomena are seen to have their immediate source in biological modes of behavior and to owe their concrete content to the influence of cultural conditions" (64). Prof. Dewey steers his course resolutely between the two extremes of subjectivism and absolutism. He is severely critical, on the one side, of theories which isolate desire and interest as original sources of value from "the contextual situations in which they arise", with the result that any desire is just as "good" as any other in respect to the value it institutes (55-56). Such a doctrine, "if it were systematically acted upon, would produce disordered behavior to the point of complete chaos" (*ibid.*). Moreover, it provokes a reaction to the opposite extreme, *i.e.*, to a theory of ends in themselves and intrinsic values, determinable *a priori* in complete independence of verifiable experience. In their "endeavour to escape from the frying pan of disordered valuations", men "jump into the fire of absolutism" (*ibid.*). This, to Prof. Dewey's mind, is an even more disastrous alternative. "The 'desirable', or the object which *should* be desired (valued), does not descend out of the *a priori* blue nor descend as an imperative from a moral Mount Sinai" (32). Clearly Prof. Dewey has no use for Kant. Nor will he suffer any implication of other-worldly values. He is out to vindicate the objectivity of value while maintaining an uncompromisingly humanistic outlook. Value-propositions, he tells us, are appraisals of means to ends which "are determinable only on the ground of the means that are involved in bringing them about" and are to be "tested by consequences that actually ensue" (53). The means which thus both condition the ends desired and supply their content are matters of fact, expressible in propositions of physical, psychological and sociological science. What more can anyone want in the way of objectivity?

Such, in bare outline, is Prof. Dewey's "program" of a theory of valuation. For its completion there is needed systematic enquiry, such as has never yet been adequately carried out, "into things sustaining the relation of ends—means" and the application of its results to "the formation of desires and ends". His argument to this conclusion is, like all that he writes, well worthy of study; it is concise and logical, comprising incidentally some searching criticisms of current doctrines, *e.g.*, those of the Logical Positivists and of Prof. Perry. (It is unfortunate that no references are given in the text, even where authors are quoted, though a Selected Bibliography is appended at the close.) The author's method throughout is

constructive, criticism being subordinated to the discovery of the elements of truth in the theories subjected to censure. Once indeed he falls into the trap he has himself laid for his opponent; when, after justly objecting to the introduction of the term 'feelings' by the Logical Positivists (or/and Behaviourists) in their reports of "ejaculatory" value-expressions on the ground that 'feelings' are not empirically verifiable, he himself introduces the term 'person' into his statement of verifiable behavior (11). Personality is surely not a strictly behavioral term, indicative of an organic activity "open to public inspection and verification" (10). Moreover, in insisting (again rightly) on the presence of an ideational element in all desire and valuation, he takes no note of the anticipations of valuation present below the ideational level, to which Whitehead and Laird (in his theory of 'natural election') have recently devoted much attention. But our chief criticism on Prof. Dewey's pamphlet—over and above his extrusion of other-worldly values—is against the primacy accorded to the category of means-and-end. The Jesuits have been accused, with or without reason, of teaching that the end justifies the means. Prof. Dewey makes short work of this maxim (39 ff.), pointing out, with Charles Lamb's essay on roast pork as an illustration, the error of supposing the means to be externally related to the end. But he seems to fall into the same error, so to speak, from the opposite side. His view implies that the means justify the ends. Only thus can he make good his contention that ends derive their whole content from the situation of fact. Is not the true solution to be found in recognising that the category is inapplicable, at least, to the higher levels of human conduct, where the desired good is rather a form immanent in a train of action that resists analysis into either means or ends? Such a form, *pace* Prof. Dewey, may have intrinsic value, though its value is not to be measured solely "by the capacity to guide action in making good existing lacks".

Prof. Dewey closes with some interesting remarks on the practical need at the present hour for a theory of value that will reconcile the claims of "the intellectual and the emotional in human relations and activities". The rise of dictatorships, he suggests, is largely due to the strain produced by their separation, a strain "so intolerable that human beings are willing to pay almost any price for the semblance of even its temporary annihilation" (65). Further, he believes that the "program here sketched will promote the unification of science, by spanning the wide gap between humanistic and non-humanistic knowledge".

W. G. DE BURGH.

Le Miracle Grec : Étude Psychanalytique sur la Civilisation Hellénique.
By R. DE SAUSSURE. Paris : Denoël, 1939. Pp. 210. 30 f.

WHY should the extraordinary phenomenon of Greek culture have appeared when it did and where it did? Attempts have been made to explain it on geographical, racial, and historical grounds; but these explanations, while partly true, either fail to explain the fact sufficiently or would apply equally to other communities, which were not in fact equally cultured. Thus the climate, while facilitating security, was enjoyed by others besides the Greeks. Again, the Greeks were a mixed race, which is no doubt an important cultural factor, but as a sole explanation of culture it would entail that the English were more cultured than the French (not, by the way, the author's illustration). And if historically the Greeks

followed science while other peoples pursued myths, we have not an explanation but a phenomenon to be explained.

The author bases his thesis on the chief anthropological application of psycho-analysis—Totemism.

To do this requires an elaboration of both the more primitive and the less primitive forms of this phenomenon. After describing the more primitive forms, the author goes on to the way it appears in the times of the Pharaohs. The chief difference is the degree of emancipation achieved: a man's reaction to circumstances is no longer strongly reinforced by others of his clan who have the same feelings as himself, but is determined chiefly by his relation to his ruler. The Greeks showed the highest degree known of this emancipation of the individual: his own feelings and conscience, less influenced by the feelings of others or fear of a ruler, determined his reaction. This is expounded also in terms of primitive religion. For the primitive, all dealings with physical reality are dominated by sanction and taboo; in the next stage, the priesthood deals by proxy, as it were, with the supernatural, and leaves the rest of the community free to deal with reality, *i.e.*, to go about their business—this is the stage of technical development. The final stage is that of culture and science, which arises when the individual relies less on the priest and makes religion a more private affair, but without infusing it into his dealings with reality. This emancipation is the pre-requisite of cultural progress.

How did the change come about? (a) Geographical factors had ensured that the Greeks were left undisturbed by invasion and had endowed them with plenty, and thus security, the first condition needed for the growth of culture, prevailed. (b) The form of the *œdipus* or totemistic relation at home had reached a stage where the younger members were conscious of the desire for freedom from paternal bonds and were able to face the conflict inevitably arising from this desire. (c) Colonisation formed an outlet for this conflict. The more highly developed men of independence and initiative emigrated from continental Greece to the islands, so that the totemistic tension between father and son relaxed.

This last was not an escape from friction at home, but a manifestation of independence and freedom to undertake responsibility for new enterprise: "... ce n'était pas seulement poussés par un désir personnel que les cadets émigraient, mais leur mécontentement faisait réaliser aux autorités elles-mêmes la nécessité d'organiser des colonies" (p. 116). For this reason the first two conditions, geographical and psychological, enabled the third, colonisation, to lead to fruitful results. "Tandis que la plupart des métropoles, écrit Glotz, végétaient dans des horizons bornés, étouffaient dans des institutions étriquées, d'un archaïsme presque immuable, les colonies qui devaient leur existence même à la passion du grand air et de la liberté, ne pouvaient vivre que par une continuelle adaptation au milieu et de promptes initiatives" (pp. 116-117).

It is not clear how the emancipated relation between the young and old arose; but this does not apparently fall within the scope of the book—which is to *state* the conditions differentiating cultured Greece from other communities without going on further to probe those conditions.

Though the parallel is by no means exact, it would be interesting to see how far this thesis would apply to American and Dominion independence of Great Britain.

The thesis is skilled, the author makes plentiful use of diverse sources, and his view is obviously important and in all probability true—it is not sufficiently fully reasoned for us to be sure about that. The theme happens

to form a complement with another recent one, Prof. Farrington's *Philosophy and Politics in the Ancient World*, which is concerned with the decay of Greek culture. In the present work we have its conditions or origins; what remains to be written is a book on the cause of these conditions or origins.

A good deal of the material is inevitably not new; "Ce livre n'est pas une oeuvre d'érudition, il est un simple essai" (p. 9). We find well known anthropological and psycho-analytical ground covered again—in the description of primitive totemism, for example. This would be difficult to avoid, because it is essential for the reader to be clear that it is the psycho-analytical view of totemism that is being used. Happily the author makes this part quite interesting in spite of its being well worn. He might well have given short summaries to make the thread of the argument clearer, and expanded passages explaining the transition from one form of totemism to another.

Though the exposition might have been better, the work can ill be neglected by anyone interested in the theme. And the general reader will find it a serviceable introduction to the psycho-analytical approach to anthropology and sociology.

The book contains neither table of contents nor index.

J. O. WISDOM.

Studies in Mediaeval Thought. By G. G. COULTON, Litt.D., D.Litt., F.B.A. London: T. Nelson & Sons Ltd., 1940. Pp. 229. 2s. 6d.

THE general thesis of this work is now fairly familiar to British readers, viz. that the Middle Ages were a time of profound social sickness from which Europe made a gradual recovery culminating in the Renaissance, the Reformation, and modern science. Starting with the ideas of the Empire and the Civitas Dei of St. Augustine, Dr. Coulton shows with some plausibility how the institutions and thoughts of the mediaeval period were in great measure determined by the memory of the old Roman order as reflected in the Papacy and the Holy Roman Empire. His treatment of such early thinkers as John the Scot is illuminating, because it shows that there was a vein of originality which the Church was officially obliged to condemn although it absorbed something from it. The treatment of the later thinkers is far less satisfying. It is to be feared that Dr. Coulton, like so many before him, has fallen into the mistake of praising the rebels who enjoyed no responsibility, and condemning the orthodox because they were content to accept their actual environment. What he fails to note is that the same forces which gave men the Sum of Theology in the sphere of thought, also gave them chivalry and the guild system in the sphere of action. What comparable achievements are associated with the Averroists or with Wyclif? If it be objected that they laid the foundations of the modern world, the answer must be that the system was founded not by those who talked but by those who acted. It was not Descartes, or even Luther, who laid the foundations of the modern world, but the House of Fugger and the traders who brought the wealth of the Indies and the Americas into the ports of Europe.

As regards the lessons to be learned by modern philosophy from mediaeval thought, it can be truthfully said that the only important one is that which is to be learned from the living example of the Catholic Church, namely, that continuity of thought is the outcome of continuity of life

rather than the reverse. The danger of even experimental science is that it places thought before experience, whereas the discipline of experience taught the Middle Ages to accept tried traditions, and the most imposing Mediaeval philosopher did little more than explore and expound a system already active and fertile in society. If the Dominicans tried to turn Thomism into a system of inquisition, that was an error comparable to that of modern political thinkers who forget that their true function is to prevent men from being ashamed of their instinctive faith by removing needless difficulties and contradictions. The especial wickedness of pure Communism or Nazism is due to the fact that they are social developments founded on dogma and not on experience. If, as seems likely, British political institutions are destined to prove the bulwark of civilisation, it is because they are essentially social and human and have evaded that dangerous intellectual tendency that makes theory the test of practice. The Englishman is loyal because he respects the King not because he believes abstractly in patriotism. He is confident of the rightness of his cause not because he believes any fantastic theories of race, but because he knows he lives in a society organised on freedom and justice.

As regards the lessons to be learned from Mediaeval institutions, the most interesting is that which concerns the universities. The idea of making learning into a profession analogous to the skilled trades was new and significant, but it was one that outlived the Middle Ages. Looking backward, one can see that what the modern world added was the ideal of athleticism to ease the hardships of a purely sedentary life and to substitute exercise for indulgence. Modern education, by its insistence on the union of the practical with the theoretical, has struck a finer balance reminiscent, in a way, of the Benedictine Rule of combining study with manual labour; but there are times when the balance seems wrongly adjusted and men betake themselves to war rather than face the simpler duties of common labour.

It is to be hoped that those who are looking for some principle of reconstruction to be applied to modern life will not neglect Dr. Coulton's interesting work, even though they may occasionally feel that his criticisms are sometimes captious and his praise too often condescending, coming as they do from an age which has placed in jeopardy the whole order and spirit of civilisation.

ARTHUR T. SHILLINGLAW.

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- Bollettino dell'Istituto di Filosofia del Diritto, Anno I, Fasc. 1 (Jan.-Feb., 1940)*, Rome, Edizioni Universitarie, 1940, pp. 47, L. 5, annual subs. L. 40.

VI.—PHILOSOPHICAL PERIODICALS.

JOURNAL OF PHILOSOPHY. Vol. xxxvi (1939), 20. **Bruce W. Brotherston.** "Firstness." [The "ultimate categories" are not Platonic Forms or Hegelian Categories but are, perhaps, "interest; . . . instrument; and satisfaction or unity; all other forms and ideas . . . being subordinate and functional."] **Rudd Fleming.** *Of Contrast between Tragedy and Comedy.* [Considers "comedy and tragedy as dividing between themselves the two types of incongruity which, perhaps, in the moral and social world are the most universally and deeply interesting—disproportionate good fortune, the source of unreasonable confidence, and disproportionate misfortune, the source of undirected and destructive fear."] 21. *A Symposium of Reviews of John Dewey's "Logic: The Theory of Inquiry."* **Evander Bradley McGilvary.** [How would he prove his central thesis that the "only view that provides a consistent logical interpretation" of some of the "facts" is that logical forms are not "forms of the subject-matter under investigation" but are "only modes of operating upon subject-matter under investigation."] **G. Watts Cunningham.** [Picks out of Dewey's book a formidable array of quotations which, he says, are equivalent to saying that "relations of implication obtain only within some sort of subject-matter", which, therefore, "is the condition of inference". Draws attention to the explicit repudiation by idealist logic of the notion "that the subject is given 'ready-made'".] **C. I. Lewis.** [Agrees with Dewey that "meaning, apart from some possible action and the reality in which it should eventuate, is a fictitious entity and not found in human thinking". "Each possible verification turns out, on examination, to be some eventuality which will accrue or not accrue according as we adopt or refuse to adopt some attitude or course of action." Therefore "that 'universal determinism' sometimes supposed to be an essential presupposition of science is not something to be judged false or true but merely a pedantic fable; such that even if admitted in words it could find no application to any actual situations in which a human investigator has a real purpose in prosecuting an inquiry".] **Ernest Nagel.** [(1) Dewey does not, as is often alleged, confuse the validity of a notion with its genesis. (2) Comparison of his distinction between "generic" and "universal" propositions with the widespread distinction between "synthetic" and "analytic" propositions.] 22. **Lewis E. Hahn.** *Neutral, Indubitable Sense-data as the Starting Point for Theories of Perception.* [Many careful philosophers doubt whether there are sense-data, so how can Price hold that their existence is indubitable? Starting with them has the disadvantage of requiring us to postulate for example the innate *a priori* idea of material thinghood and an innate power of expecting it to apply to sense-data.] **Virgil C. Aldrich.** *Two Hundred Years After Hume's "Treatise"* ["Hume would want to temper the extreme emphasis (of current positivism) on syntactical construction and reconstruction of languages with an infusion of a greater 'feel' and respect for the determinants of language itself, such as the items and orders of

elementary experience or the habits formed by responsiveness to them. Since this is the direction in which current positivism is already turning, . . . Hume would salute it as the result of logical refinements of his own." 23. **David F. Bowers.** *The Role of Subject-Matter in Art.* ["Subject-matter is an important esthetic factor in all the arts, and both the traditional artistic practice of introducing subject-matter and the traditional critical practice of expecting its introduction are esthetically valid and important." "It is very likely true that subject-matter sometimes enhances the esthetic design of the surface (of a picture) without changing the design in any way" and sometimes also changes the design for the better.] 24. **Percy Hughes.** *The Technique of Philosophic Explanation.* [" . . . narratives of explanation present a discontinuity which in some way we find pervaded by an underlying continuity of action." "These continuities are of three chief types, 'corporeal substances', persons, and societies." "When we explain an occurrence as the fulfilment of a tendency, the prior existence of that tendency must be established on grounds that are quite independent of that alleged fulfilment."] **Roger Hazelton.** *Human Purpose and Cosmic Purpose.* [Asserts the existence of cosmic purpose in the sense that (1) conditions sometimes support intentional modifications made by human organisms, and (2) some realised intentions have already left their mark on the objective order.] 25. *Abstracts of Papers to be read at the Joint Meeting of the Eastern and Western Divisions of the American Philosophical Association, December, 1939.* [Sixteen papers.] **Jared S. Moore.** *Why a Realism of Universals?* [" . . . if we have any right to call all dandelions 'yellow', that right can be justified only on the ground that the universe of all that in any sense 'is' includes among its constituents such an entity as yellowness as truly and as objectively as it does yellow dandelions."] 26. **Willard V. Quine.** *Designation and Existence.* ["The nominalist . . . claims that a language adequate to all scientific purposes can be framed in such a way that its variables admit only concrete objects as values." "But if the nominalist cannot supply the relevant contextual definitions, then his nominalism forbids his use of variables having abstract entities as values. He will perhaps still plead that his apparent abstract entities are merely convenient fictions; but this plea is no more than an incantation, a crossing of the fingers, so long as the required contextual definitions are not forthcoming."] **Robert Francis Greegan and George Boas.** *Insight, Habituation, and Enjoyment.* [Discussion of Boas, 19 *supra*.]

PHILOSOPHY OF SCIENCE, vi, 3 (July, 1939). **W. M. Malisoff.** *What is an Atom?* [A plea for improvement in vocabulary and habits of thought. "'Atomic' will mean 'pertaining to the atom', 'atomistic' will mean 'pertaining to a reducibility to something indivisible'." "Atom" and "structure" are to be used as "conjugate" terms. "The analysis is the total situation and it factors into two abstractions: the atom (structureless) and the structure (non-atom). . . . To prevent misunderstanding, then, one should speak of *atomistic-structural* analysis."] **W. Seifriz.** *A Materialistic Interpretation of Life.* ["The uniqueness of living matter, that which distinguishes it from the non-living, rests on structural features resident in the proteins of protoplasm. These structural features are characterised by a co-ordination of parts which make of living matter an organised and harmonious whole." "In ascribing the attribute of living to an organised state of matter characterised by structural continuity and

a specific arrangement of parts, living matter is elevated to a plane above the non-living world without the introduction of any vitalistic concepts." (A well-balanced discussion, with interesting references to recent biological research.)] **R. B. Winn.** *Is Nature Rational?* ["... rationality invariably implies adjustment and should be defined in its terms, lest our knowledge be obscured by mysticism and anthropomorphism. That is to say, we should define rationality as a form of adjustment, not vice versa. In referring to an instance of rationality in nature, the idealist actually deals with a case of adjustment. But he is not satisfied with this scientific name. . . . He chooses to call a natural thing by a name that would put himself and his kind on a pedestal. That is how he finds reason in the cosmos."] **H. S. Fries.** *Physics, A Vicious Abstraction.* ["... the 'truths' of physics (and, *a fortiori*, of the other sciences) must be acknowledged by a thoroughgoing relativism to be based upon a very shaky foundation until we can see progress as clearly in the development of our concrete ideas of the good life as we have seen it in the development of physics as an 'isolated' subject."] **C. D. Hardie.** *Our Knowledge of Other Minds.* [Claims to have found an answer to the question, "What grounds have I for believing in the existence of other minds?", which, unlike traditional answers, will satisfy the following criteria: (1) My knowledge of other minds is certain, (2) I know that other bodies have minds in the same sense in which my own body has a mind. The argument is based upon a consideration of the manner in which ideal elements are used in a scientific theory. Following Campbell, Hardie distinguishes between the 'hypothesis' (a misleading word) and the 'dictionary' of a scientific theory. "The hypothesis consists largely of statements about mathematical variables and the dictionary consists of statements connecting these variables to observable phenomena." Emphasis is laid upon the fact that not all statements of a scientific theory need be capable of translation, via the dictionary, into observation statements. It is sufficient that, of the consequences of the hypothesis, some should be so translatable. Now 'other minds' are introduced to 'explain' the observed behaviour of other bodies in a manner closely analogous to the introduction of molecules, say, into the kinetic theory of gases. The analogy is pursued in detail, and applications are made to the controversy between purposive and non-purposive psychology and also to the psycho-analytic conception of the unconscious.] **T. I. Cook.** *Science: Natural and Social.* ["... perhaps the worst consequence of the impact of relativity theory and of the indeterminacy principle in the world of the social scientist has been that these have combined with the findings of modern psychology as to the non-rational elements in man to lead to a strange belief, not simply that behaviour and the universe alike are irrational, but that reason itself is a useless tool. Thus science, which, whatever the paradoxes involved in its pursuit, has depended on and had faith in reason as a necessary tool, itself has been employed, subtly and unwittingly, in the support of the revolt against reason. . . ."] **C. Kluckhohn.** *The Place of Theory in Anthropological Studies.* [A well-documented protest against the preoccupation of American anthropologists with description and the collection of facts.] **A. Lesser.** *Research Procedure and Laws of Culture.* [Analyses a number of "normal expectations" revealed by, but not explicitly formulated in, the work of the research anthropologist. "If we turn for laws to the expectations of the scientist at work, the instrumental character of such laws is immediately apparent." "In relation to laws as hypotheses or working expectations, the case which is studied at any time

becomes the experiment by means of which the hypotheses are verified or disproved." "The constant emphasis in social sciences upon research is then seen in its true light. It serves the function of experiment in other sciences, viz. that hypotheses or laws are being checked and verified by the conditions in a specific case." **W. H. Werkmeister.** *Natural Languages as Cultural Indices.* [If languages are classified as "prefix-languages" and "suffix-languages", correlation can be established between the type of language used and the type of culture (mother-right, father-right, etc.) in which it is used. "... the correlation of language types and culture types, as here suggested, is positive and is sufficiently well established to deserve serious consideration. Natural languages are cultural indices."] Discussion (Correspondence). Reviews and Notes. vi, 4 (October, 1939).

W. M. Malisoff. *What is a Gene?* [A sequel to the article, *What is an Atom?* in the previous number. "A gene, then, can be looked upon as an atom with a history or a life span or a career or simply as an atom with a past, present, and future." A "gene", in this generalised sense, is the provisional terminus of that type of scientific analysis which stresses function. All scientific systems can be regarded as terminating in the construction of genes: "when properly analysed they can show something which will play relative to that analysis the rôle of an indivisible with a history and something which we can call the function of that indivisible . . ."] **A. G. Ramsperger.** *What is Scientific Knowledge?* ["Knowledge is the recognition of the way in which one sort of object is connected with, or enters into, the rest of nature. It is a grasp of the circumstances under which nature will exhibit herself in this or that particular form." "To know an object is to be correct about what it imports." "Scientific knowledge does not differ from everyday knowledge by having to do with a different realm of objects; it differs only in the degree of abstraction it involves, the methods and techniques it employs and the generality of its results."] **L. A. Dexter.** *Causal Imputation and Purposes of Investigation.* [Defines cause as "that which, if an antecedent, if altered, will produce a result which we wish".] **R. W. Sellars.** *A Clarification of Critical Realism.* [A restatement, directed more particularly against Dewey and logical positivists. "Vive epistemology and ontology! Let us be philosophers again in the full sense of the term."] **A. C. Benjamin.** *Science and Vagueness.* [Points out three factors which contribute to the vagueness of symbols: (1) vagueness of the pointing gesture (or any alternative method of ostensive definition), (2) complexity in the symbol's referend, (3) the need to ensure that symbols shall apply to cases not included in the finite class of samples on which an ostensive definition is based. "If I prefer a vocabulary which is exact but extensive I shall insist that the future cases of red must be *exactly like* the past cases—under which conditions I may find that I shall never experience any cases of red at all. Or if I prefer a vocabulary which is vague but limited I shall insist that the future cases of red may be anything *very loosely resembling* the past cases—under which conditions I may find that everything I experience is red. The point is that I recognise the claim of the future even when I define my symbol in the first place by reference to observed cases. I purposely leave a fringe of indefiniteness around every symbol in order to allow me to select at some future time that horn of the dilemma which seems most appropriate." The bearing of this analysis upon operationalist theories of the nature of scientific concepts is examined. "Vague ideas are part and parcel of science, and any theory of meaning which denies them is not a theory of science."] **E. Vivas** *Value and Fact.* [Argues

that "there is no exclusively philosophical problem of value". "The dichotomy therefore between fact and value must be abandoned on two grounds. Values are facts, since they can be verified, controlled, changed empirically. But facts are always valuable since they are always sought for in response to an interest."] **A. Hofstadter and J. C. C. McKinsey.** *On the Logic of Imperatives.* [By "imperatives" is intended laws, injunctions, commands, etc. A *directive* is any imperative "which includes an indication of the agent who is to carry it out"; a *fiat* is any imperative which is not a directive. An imperative is *satisfied* "if what is commanded is the case", while it is *correct* "if what it requires ought, or ought not, to be the case". The authors are mainly concerned to show how a calculus of indicative sentences (Carnap's Language I of *The Logical Syntax of Language* being taken as an illustrative example) can be extended to include imperatives. They restrict the calculus to *fiats* and their *satisfaction*. The symbols and axioms needed in order to supplement Carnap's system in this way are set out in detail. The main theorem of the new calculus is that each fiat is equipollent to an indicative sentence, which "amounts to saying that all imperative-connectives can always be eliminated from a sentence". Some discussion of the *correctness* of imperatives is appended.] **M. C. Nahm.** *The Philosophical Implications of Some Theories of Emotion.* [A defence of William James's theory (suitably modified in the light of recent physiological and psychological research). Argues that "the emotions are constituted of observable behaviour, the limits of which are 'instinct' and 'mood', the behaviour varying directly in intensity from overt action to peripheral reaction and inversely with the alternative modes of action implied in the organism's 'images' (i.e. stimuli effective for it), implying epistemologically the operation of an inherited *Apperceptionsmass* and necessitating for complete explanation ateleological and teleological definition". Special attention is devoted to Cannon's thalamic theory of emotion. (A long and closely reasoned paper, with many critical references to other books and papers.)] Discussion (Correspondence). Reviews and Notes.

vii, 1 (January, 1940). **W. M. Malisoff.** *What is a Monad?* [Follows two previous articles by the same author entitled *What is an atom?* and *What is a gene?* Defines a monad as "a gene with a private character". "Phenomena of clairvoyance, telepathy, and the like, if only they were facts, would be possibly explainable as monadistic introspection in a democracy of monads."] **O. Lee.** *Philosophy and Science.* [The subject-matter of philosophy is constituted by "the generic traits or categories of experience and action". Its method "is characterized by insight and abstraction" and issues in "certainties". "Examples are the existence of the subject in a sense that escaped Hume, the existence of the external world and of causality in a sense that escaped both Berkeley and Hume, and the existence of virtue in a sense that escaped Protagoras."] **A. Lapan.** *The Purpose of Philosophy.* [A terse article which hardly bears further condensation. "The reconstruction of living so that it will have the utmost value is the primary objective of philosophy." "Philosophy . . . is generated by moral behaviour, habitual and unexamined, and issues in moral behaviour, rational and self-conscious." "Philosophy then, is a discernment of the conditions on which consequences depend, and a reflection upon the good and evil of those consequences." "The existence of the moral order becomes questionable only when the good is identified with particular moral ideas."] **D. L. Miller.** *Two Kinds of Certainty.* [Regards Morris' distinction between the syntactic, semantic

and pragmatic levels of meaning as relevant to the distinction between "practical" and "logical" certainty.] **P. W. Bridgman.** *Science: Public or Private?* [Uses the phrase "science is public" as abbreviation for the view that confirmation of scientific propositions is primarily based on the consensus of expert judgment. Bridgman thinks this aspect of scientific method has been over-emphasised. Science involves personal activity—"the requirement that I impose on myself in general is that I be able to adapt myself with success to my environment, and the decision as to whether I have made the adaptation is one which I make and which no other can possibly make for me". That this view has non-trivial consequences, Bridgman shows by discussing an example from formal logic: "... every syllogism involves implicitly a 'text' or body of comments as to meaning and use. . . . The text imposes conditions. I have to be aware of these conditions as I perform the process in which I am guided by the marks on paper. . . . This checking and awareness is private; no one can do it for me". His contrast between the "private" and "public" aspects of science is connected with "the unavoidably dual character of many of the words that we use in describing what happens to us and to our fellows".] **J. E. Turner.** *The Distinction between "Mechanics" and "Mechanism"*. [The widespread view that modern physics has refuted a mechanistic view of the universe in favour of ideas "akin to what we know in our own experience as life, will and freedom" is based on a confusion between "mechanics" and "mechanism". The former is properly applicable to Newtonian mechanics alone; but the idea of mechanism is wider, as shown by the fact that electrical systems cannot be adequately described in terms of Newtonian mechanics. Mechanisms and organisms are closely connected. "It may be, in fact, that life and mind, or perhaps the spiritual as such, can manifest or express themselves only by means of those adequately intricate and delicate mechanisms, in the modern and non-Newtonian sense of this term, with which nature is indubitably and inexhaustively endowed."] **T. A. Goudge.** *Peirce's Treatment of Induction*. [Peirce emphasised the importance of sampling. In order to be truly random it must be subject to "predesignation" i.e., we must decide what the characteristic is for which we propose to sample *before* the sample is taken. In discussing the justification of induction Peirce rejects Laplace's rule of succession and Mill's principle of the uniformity of nature. Induction is a self-corrective process, "which in the course of operation gradually eliminates its own errors". (Goudge points out that this doctrine is inadequate, but hardly allows enough space for criticism.)] **E. Nagel.** *Charles S. Peirce, Pioneer of Modern Empiricism*. [An address commemorating the hundredth anniversary of Peirce's birth, read to the Fifth International Congress for the Unity of Science, September, 1939. In spite of Peirce's "life-long polemic against positivisms of the type of Comte and Pearson", he is a spiritual ancestor of contemporary logical empiricism. His "pragmatic maxim, proposed as a method for clarifying ideas", has the same general intention as the principle of verifiability. And his successors might with advantage give more attention to his "emphasis upon the contexts in which terms occur and upon the complex of relevant practices involved in their use"; "... an adequate empiricism can not afford to neglect Peirce's emphasis upon *habits of action* or to concentrate entirely upon the reduction of one set of statements to others". Peirce's "fallibilism" (refusal to accept incorrigible statements) and "common-sensism" ("that in any enquiry we must plunge into *medias res* with all the beliefs and prejudices we

actually have") are also in the spirit of modern empiricism. And his views on induction suggest promising lines of inquiry. "Were he still among us he would surely have endorsed the happy marriage of the cultivation of logic and the empirical temper which distinguishes this movement." **B. Waters.** *Particulars, Universals and Verification.* ["... verification is always in terms of both particulars and universals." "Without universals community of meaning would be impossible." "We may define a universal as 'a shared definition that is numerically expressible'." (An unhappy blend of opinions variously held by Russell, Stebbing, Ayer, C. I. Lewis and Carnap.)] **L. J. Lafleur.** *The Fluxive Fallacy.* ["... that error which exists when the meaning of a phrase or philosophical position is indefinite, having two or more incompatible interpretations, and when some of the disadvantages inherent in the philosophy can be met by one of the possible interpretations and other disadvantages by other interpretations." Illustrations are drawn from Kant, Fichte, Socrates, Freud and Descartes.] **A. V. Bushkovitch.** *Some Consequences of the Positivist Interpretation of Physics.* ["... the positivistic view has been, and remains, the guiding philosophy of quantum mechanics in its most fruitful period." "Physics thus becomes not so much an experimental science, as a 'laboratory' science, or the behaviour of certain ... very interesting instruments producing very startling effects, and often leading to the construction of highly useful devices."] **K. H. Niebyhl.** *Modern Mathematics and Some Problems of Quantity, Quality and Motion in Economic Analysis.* [An obscure paper, concerned with the bearing of modern views of the nature of mathematics (mostly regarded as defective) upon economics. Lewin's system of "topological psychology" is commended: "he has made the first practical attempt to devise a scientific language which allows for the presentation of processes in motion". But phrases like "the problematics of mechanics", "hodological descriptions of economic problems" and (Brouwer's) "imposing structure of the concept of time" tend to baffle the reader.] **E. Zilsel.** *History and Biological Evolution.* [Finds a behaviouristic criterion for distinguishing history from biology in the relative orders of magnitude of the velocity of change in the two fields. "The realm of history comprehends human occurrences and their causes which are slower by one degree than the reactions of the individuals and faster by one degree than biological evolution." The higher velocity of historical change is associated with the social character of historical process and its dependence upon the relatively plastic character of human traditions.] Discussion (Correspondence). Reviews.

VII.—NOTES.

MIND ASSOCIATION: ANNUAL MEETING.

The Annual Meeting of the Mind Association will be held this year in Trinity College, Cambridge, at 4.15 p.m. on Friday, 5th July.

22nd June, 1940.

TO THE EDITOR OF "MIND".

SIR,

May I through your column, express the thanks of my Committee to the Mind Association for its Appeal on behalf of the Council for Assisting Refugee Philosophers, and to all who have sent contributions in response to that Appeal?

The contributions received from this source during the period from 1st October to the present date have amounted to £16 18s.

Yours faithfully,

C. A. MACE

*(Hon. Secretary, Council for Assisting
Refugee Philosophers).*

MIND ASSOCIATION.

Those who wish to join the Association should communicate with the Hon. Secretary, Mr. W. C. KNEALE, Exeter College, Oxford; or with the Hon. Treasurer, Mr. J. I. McKIE, Brasenose College, Oxford, to whom the yearly subscription of sixteen shillings should be paid. Cheques should be made payable to the Mind Association, Westminster Bank, Oxford. Members may pay a Life Composition of £16 instead of the annual subscription.

In return for their subscriptions members receive MIND gratis and post free, and (if of 3 years' standing) are entitled to buy back-numbers both of the Old and the New Series at half-price.